

small air forces observer

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North Korean People's Air Force Inventory 2014
Ecuadorian Pilot Shot Down in Peace Time
Export Northrop F-5: Malaysia to Yemen
LVA from July 1915 to December 1915
North Korea's Air Koryo
Exotic Birds 6

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North Korea acquired six An-24B “Coke” twin-turboprop airliners in 1966, followed by an additional three An-24RVs – with the built-in RU19-300 turbojet “booster” for short-field operations – eight years later. These were operated by Chosonminhang-Korean Airways; the three An-24RVs remain in service today. (Andrés Ramírez/Airliners.net via Author)



International jet operations began in 1975 when Chosonminhang-Korean Airways acquired the first of four Tu-154B “Careless” three-engine airliners for services to Moscow, Prague, and East Berlin. One of these was written off in a landing accident at Pyongyang-Sunan IAP on 15 August 2006; reportedly only one is currently in service. (Yu Ming via Author)



Chosonminhang-Korean Airways inaugurated non-stop international service to Beijing and Shenyang with at least two of the four Il-18D/E “Coots” acquired in 1965. One Il-18D (#834) was sold to Air Guinée in 1968. Another (P-835 seen here) was known to be actively flying as recently as 2012. (Author’s Collection)



To provide jet service domestically, in 1984 Chosonminhang-Korean Airways acquired two 76-passenger Tu-134B-3 “Crusty” twin-turbojet airliners. A much dated design – one of the two was the last Tu-134 produced – they sufficed for shorter routes. As of January 2015, both reportedly remain in Air Koryo service. (Author’s Collection)

SMALL AIR FORCES OBSERVER

The Journal of the Small Air Forces Clearinghouse

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THE SYDNEY AWARD: This is a quarterly award given to a member

who has consistently provided excellent articles for publication in SAFO. The awards consists of a one-year subscription to SAFO and is funded by the Richard E. Cross and Naidene Denton Cross Memorial Fund. The honoree this quarter is Santiago Rivas for his series of articles on South American aviation history.

COVER COMMENTS: In the mid-1980s, the KPAF received 150 new, third-generation MiG-21MF (M for Modernizirovanny ["Modernised"] and F for Forsirovanny ["Up-rated (engine)"]) from the USSR, these being equipped with the more capable RP-22 radar and the R13-300 turbojet engine. Some 55 of these "Fishbed-Js" equip the 86th AR, based at Koksan AB (southeast of Pyongyang, in the central highlands) and an another 3rd ACD regiment at Hwangju AB, north of the DMZ. (North Korean News Agency)

[Editor's note: The final chapter in Doug Dildy's monumental study of the Korean People's Air Force (KPAF) begins on page 122 with a compellation of the KPAF's Air Order of Battle circa 2014. This is followed by two pages of photos of recent KPAF combat aircraft. A further three pages (110 & 143-144) present photos of airlines of Air Koryo that are included as transports in the KPAF's Air Order of Battle.]

AUSTRALA

AUSTRALIAN PLASTIC MODELLERS ASSOCIATION

(APMA, PO Box 51, Strathfield, NSW 2135; 4 issues airmail A\$40. International payment is best handled via Paypal at iansharyn@bigpond.com.au). Web Site: www.apma.org. All articles have b&w or color photos and excellent scale drawings.

4/15 (36 pages) "Yugoslav Bristol Blenheim" 5 pages inc. 4 photos, color top & bottom plan drawing, and 4 color profiles (3 Yugoslav & one Hungarian). "Bristol Blenheim kits" 2 pages. "Blenheim/Bolingbroke: Drawings & Details" 12 pages inc. 10 photos and 6 pages of multi-view 1/72-scale drawings (Mk. I, IV, & V). "DC-6 in Australia" 6 pages inc. 8 photos and 3 profile drawings. "Dornier Do F/P" 2 pages inc. 2 photos. Other articles of interest are: "Italian Medium Tanks: Part 2" "WW2 Croatian Armoured Locomotive" "Praga SPE-34 Armoured Truck"

AUSTRIA

OFH NACHRICHTEN (Oesterreichische Flugzug Historiker, Pfenniggeldf 18/2/14, A-1160 Wien.

1/16 (44 pages) "Oblt. HR Effendi Pieler" 6 pages inc. 9 photos (Fokker E.1). "Absturz in den Alpen" 6 pages inc. 9 photos (Yugoslav F-84G).

CZECH REPUBLIC

Revi: Quarterly Journal of Aviation for Enthusiast and Modelers. www.revi.cz. Review issues available for the SAFCH Sales Service.

#87/2012 (56 pages) "Phönix C.I 121.23" 2 pages w/ 5 photos. "F-111B" 10 pages inc. 21 photos. "T-2 Buckeye in Greece" 3 pages inc. 8 photos. "Vautour in Israeli Service" 3 pages inc. 3 photos and 2 color profiles. 11 pages of reviews of kits and book.

#88/2012 (56 pages) "Norman Taylor: Hurricane Pilot" 11 pages inc. 34 photos, 5 color profiles [Hurricane (2), Meteor, Tempest, & Harvard]. "Vautour IIA in Israeli Service" 3 pages inc. 7 photos and 2 color profiles. "Aviatik D.I Berg" 5 pages inc. 8 photos. 19 pages of reviews of kits and books.

#89/2012 (56 pages) "Aviatik D.I Berg" 5 pages inc. 8 photos and a color 2-view.

"Grumman A-6A Intruder" 6 pages inc. 11 photos. "Condor Legion Hs 126" 4 pages inc. 6 photos and 3 color profiles. "Israeli Spitfires" 7 pages inc. 13 photos and 4 color profiles. 16 pages of reviews of kits and books.

#90/2013 (56 pages) "BAC 167 Strikemaster" 2 pages inc. 6 photos. "RAF RE.8 A4445 in Austria Hungary" 7 pages inc. 17 photos and a color 2-view. "Avia BH-21" 4 pages inc. 8 photos. "Mystere IVA in Israeli Service" 6 pages inc. 10 photos and 2 color profiles. 15 pages of reviews of kits and books.

FRANCE

AVIONS: Toute l'Aeronautique et son Histoire (Lela Presse, 29 rue Paul Bert, 62230 Outreau, France. 71 euro for 6 issues). Website: www.avions-bateaux.com. E-mail: contact@avions-bateaux.com.

#209 Janvier/Fevrier 2016 (94 pages) "Un prince sur le front de l'Est. (1re partie)" 18 pages on the career of Romanian prince Constantin Cantacuzin inc. 33 photos, and 4 color profiles (Potez 560 & 561, Hurricane, and Bf 109G). [Editor's note: Anyone have 3-view drawing of the Potez C.641 Typhon? And would it be possible to convert the kit of deH Comet into a Typhon?]. "L'Argentine Retire ses Mirage" 3 pages inc. 8 photos. "Premiers Combats dans le Desert" 14 pages inc. 25 photos and 9 color profiles [Gladiator (5) and Fiat CR-42 (4)]. "Bloch 134, Le Bombardier Levrier" 8 pages inc. 10 photos and full-page 3-view scale drawing. "GAO 548, de l'Alsace à l'Italie" 15 pages inc. 23 photos and color profiles [Potez 58 & 63.11 (2), and Breguet 27] "Il y a Cent Ans: Eugene Gilbert' 'Le Vengeur' (1re partie)" 15 pages inc. 36 photos of pre-war and early WWI a/c. "L'Avion de Reconnaissance: Neman R-10. (1re partie)" 12 pages inc. 27 photos and 6 color profiles.

GERMANY

IPMS Deutschland Journal. Website: ipmsdeutschland.de. All color. Subscription: Europe 36 E; others 40 E.

2/2015 (36 pages) "Iljuschin Il-62M" 7 pages on building the 1:144 scale ICM kit inc. 16 photos. "Suchoi Su-17M4

Fitter K" 7 pages on building the 1:48 scale Eduard kit inc. 9 photos.

ITALY

JP4 Menslie di Aeronautica e Spazio. Via XX Settembre, 60-50129 Firenze, Italy. Email: jp4@dueservice.com. Website: www.ediservice.it.

Dicembre 2015 (100 pages) Color photos: Saudi Arabia Typhoon; Ecuador Hindustan Dhruv; & Oman C295. "Museo Aeroespacial Colombiano" 4 pages inc. 8 photos (Ju-52, P-47D, OV-10, Lodestar, Gavilán 35B, F-80, Junkers W34, & F-86F). "Incidenti Militari: 1½ pages inc. 6 photos (Afghanistan Cessna 208, Honduras Bell 412, Syria Mi-8, & Mali Fokker F-27).

Gennai 2015 (100 pages) Color photos: Azerbaijan Il-76 '4K-AZ100; Argentine IA-58H Pucara 'AX-561'; Philippine KAI FA-50PH, and Turkey Boeing 737 AEW. "Guerra aerea contro Daesh" 6 pages inc. 13 photos (French, RAF, & Russian). "61° Stormo" 8 pages inc. 15 photos (Aermacchi T-346A, RT-339C, T-339A, & FT-339C). "Novita in casa Pilatus Aircraft" 4 pages inc. 7 photos [PC-24 Biz Jet 'HB-VXB, PC-7 (India), PC-12 'T7-TTC' (San Marino), PC-6 (China), PC-7 (Qatar), and PC-12]. "Concluso il restauro del G.59" one page inc. 2 photos. "Incidenti Militari: one page inc. 4 photos (Spain Mi-17 & Egypt Mi-17).

Febbraio 2016 (100 pages) Color photos: Afghan A-28, Bangladesh Mi-17; and Iraq L-159. "Progetto 55: Construzione di un S.55 volante" 2 pages inc. 3 photos on project to construct a flying replica of the S.55 twin-hull flying boat. "Fuerza Aérea del Perú" 6 pages inc. 13 photos (MiG-29, KAI KT-1P, MB-339, EMB-312, Zlin 542, An-32, & C-27J.). "Varsavia: aerie e musei" 4 pages including 11 photos (Tu-2, MiG-21PF, Pe-2, Yak-9P, PZL I-22 Irydu, IL-28, MiG-15UTI, Su-22, & MiG-17). "Incidenti Militari: one page inc. 3 photos (China Chengdu J-105H, Bolivia Bell 206, & Colombia Basler BT-67 Turbo 67).

The LVA from June to December 1915

Frits Gerdessen

Aircraft inventory

By June 1915, the LVA inventory was at its lowest point, down to 8 aircraft (Farmans LA2/4, LA6/9, and K3) of which 3 were in repair. LA3 and LA4 were at detachments - Gilze-Rijen (Lt. Versteegh) and Kemperheide (Lt. Coblijn) respectively. There were now 11 pilots. The situation improved after 5 June when Trompenburg delivered its first HF.22 (LA10). In July the naval detachment received Farman M1 as replacements for the two Farmans that remained in France in August 1914. In addition, the LVA had 6 usable interned aircraft, 3 of which were bought in September and the others in 1916. Later in 1915, three more usable aircraft were interned and were bought in 1916.

On 27 May, seven Farmans were ordered from Trompenburg. These were delivered in 1915: LA11, LA15/19, and M2. On 13 October, another four were ordered, which were delivered in 1916: LA20/21 and LA26/27. Trompenburg also supplied trucks and trailers for aircraft transport.

The Farman production was possible thanks to the purchase in France of 80hp Gnome rotaries. Eleven were delivered in August-September 1915. Before these arrived, 16 more were ordered, but only 8 were delivered in 1916.

In December 1915, the LVA had 19 aircraft on strength (16 of its own): 16 Farmans (LA3/4, LA6/11, LA15/19, naval M1/2, and colonial K3), 3 interned aircraft bought in 1915: Albatros B.I LA12 and Avro 504 LA13 and LA14.

Of six usable interned landplanes, which were bought in 1916, three were fit for use. Up to December 1915, 15 landplanes had been interned.

Of the Farmans, LA18 and LA19 arrived in December. LA18 was not yet fully test flown, and LA19 not yet assembled.

On 27 September, the LVA had its first bad crash. Lts. M.L.J. Hofstee (pilot) and H. Polis came down with LA2 near Utrecht. LA2 was wrecked and written off and the crew badly injured. Both recovered, but Hofstee became unfit as a pilot. In Farman crashes, the rear-mounted motor often survived.

Pilots

In August 1914, the LVA had 9 pilots. The original four: Lts. F.A. van Heijst, W.C.J. Versteegh, L.F.E. Coblijn, and L.J. Roeper Bosch. In addition there were five reserve pilots: Lts. J. Labouchère and P.M. van Wulfften Palthe, LTZ H.G. van Steijn and ensigns M. van Meel, and K.H. Bakker. Van Meel and Bakker were discharged in 1914.

Lt. Labouchère went to France in 1915 where he was posted at the Embassy and was charged with the purchase of equipment starting with the Gnome rotaries.

In November 1914, five pilots obtained their FAI license: Lts. A.N.S.W.L. Coblijn, A.K. Steup, M.L.J. Hofstee and G.A. Koppen, and LTZ A.S. Thomson.

Thus the LVA had 12 pilots in January 1915 (incl. 2 naval), two of which had their Military Brevet (MB). The others qualified in 1915.

In 1915, four naval officers obtained their FAI: LTZ2 H. Nieuwenhuis, LTZ2 K.W.F.M. Doorman, LTZ2 K. Muller, and OMSD2 H. Steensma. (Note 1) LTZ van Steijn and OMSD Steensma was sent to the US in 1915 to buy aircraft for the Navy.

In December, four more pilots qualified for their FAI: Lts. C. Land, J.G.C. Duinker, W.F. van der Hoff, and J. Engelbert van Bevervoorde, the latter two belonged to the NEI Army.

NEI capt. F. Darlang, who had obtained his FAI in Belgium, continued his training. He did not qualify for the Military Brevet, and in March 1916 departed for the NEI.

Thus, Holland had 18 military pilots by the end of 1915: LVA 11, Navy 4, and Colonial 3. Of these, Lt. Hofstee was badly injured in a crash on 27 September and had to stop flying. Three pilots were abroad (USA and France).

Pilot and observer training

From March 1915, some officers were posted as observers for a two-month period. Two of these, Lts. J.G.C. Duinker and C. Land, returned for pilot training in October.

The arrival of more Farmans from Trompenburg made it possible to train more pilots. On 9 August, four naval officers arrived, followed in October by four Dutch and two NEI army officers. By this time Lt. Versteegh had become instructor.

In 1915, it was decided to train observers. On 25 October, the first group of 8 officers arrived. The idea was to give them four months training. Then they returned to their units and would be called up for refresher training every two years. Among the first group were captain J.H. Hardenberg who would succeed Lt.col. Walaardt Sacré as C.LVA in 1919, and 1st Lt. A. Plesman, later KLM-director. Some observers returned to be trained as pilots (e.g. Plesman). Their instructor was ritmeester (cavalry captain) P.H. Hekkema, who already acted as observer on 6 July.

The C.LVA was also involved with the observer training. He scheduled 20 sorties of increasing difficulty. Army commanders were asked to inform the C.LVA about upcoming exercises so he could provide targets for photography training. Unfortunately, in late 1915, the weather was often inclement. In case the weather prevented flying, ground instruction was given, including driving motorbikes and cars.

The Munitiebureau (Munitions Bureau)

At the outbreak of the war, Dutch forces were short of munitions because of budget restrictions up to 1912. Thereafter, funds were made available to purchase more, but the required minimum stock had not yet been obtained. The arrears had to be complemented at short notice. It was clear that the Dutch military industry lacked capacity and the civil industry had to be called in.

On 30 June 1915, War Minister N. Bosboom was ordered to establish the Munitiebureau (MB) which would co-ordinate production and supply of raw materials to the industry. Dr.Ir. L.A. van Roijen, professor at the Technical University in Delft (and reserve artillery officer), was appointed director. The MB was set up in Den Haag. He got a mixed civil-military staff, among them several businessmen. The idea was to use the contacts of the businessmen at home and abroad to obtain the required materials and equipment and organize production.

In addition, the MB became engaged in the purchase and production of trucks, aircraft, aero engines, and various other equipment.

Despite hard work, the results were below expectations. Abroad equipment and materials were in great demand and in short supply. Other neutral countries had the same problems as Holland.

The MB was not able to provide Trompenburg with all that was needed, and the factory staff became very inventive. Sometimes material (e.g. sheet metal) was bought on the black market. After the war, Director Grootenhuis said he even successfully scrounged for materials at the flea market in Amsterdam.

Also the LVA looked for materials. On request of the C.LVA in August 1915, the army commandeered 120 steel tubes (length 4 meters) from the trading firm Stokvis, to be used for Farman tails.

Defense industry

In 1899, the Artillerie Inrichtingen (AI, also referred to as Hembrug) were officially established near the Hembrug (railway bridge) west of Amsterdam. All Dutch military production was centered here. In 1912, the AI became a State Factory, with 1200 personnel. This number rose to ca. 8500 in 1917. After the war, the production was reduced and the personnel ran down until a minimum of 1200 in 1932.

Apart of munitions and arms (from artillery pieces to rifles) the AI produced an immense variety of products needed by the armed forces, e.g. bicycles and cars. Also precision machine tools were made here. The AI also became responsible for the maintenance of equipment and was renowned for its high-quality products. (Note 2)

Trompenburg also supplied precision work, e.g. cogwheels, thanks to modern machinery acquired in the US just before WW.1.

Reports and administration

Capt. H. Walaardt Sacré reported on several subjects to his superiors. From documents it can be concluded that he reported about personnel, equipment, flying hours, fuel and oil consumption, accidents etc. Yet for his direct superior, OLZ Gen. C.J. Snijders, this was inadequate. In a somewhat sarcastic (Note 3) letter, dated 23 June, the OLZ said that he was inadequately informed about the LVA's activities although the LVA was direct under his command. He thus requested (ordered) the C.LVA to write monthly reports about all important matters in his unit.

1. All special exercises and activities, such as bombing, gunnery, artillery observation, photography, reconnaissance, etc.

2. Progress of personnel under training.

3. Additions and losses of equipment.
4. Other (for the OLZ) important matters.

Thus, from June 1915, the C.LVA sent monthly reports to the OLZ. These are in fact letters to the boss. All are still available, although many as handwritten drafts (Note 4). In these reports, the C.LVA, who was a man of action, often uttered his frustrations about the red tape which caused delays. Parallel to this, the C.LVA kept a diary from July 1913 until October 1919.

Other (partly available) documents are the Orderbooks. The daily orders on all aspects of the service were hand written in these books which had to be read by the officers, who had to sign to confirm they read them. Of interest are orders for salvaging interned aircraft, exercises, distribution of aircraft and engines over units, returning of empty fuel and oil cans etc. and remarks like: "Where is the aircraft book for LA11. It has to be handed in asap."

Also important are the Agenda's (correspondence registers). In these all incoming and outgoing letters are recorded, with a very brief summary. Regrettably the Agenda for 1919 is lost.

Quite a number of documents have been preserved.

Organization

The increasing inventory and personnel made it necessary to revise the LVA organization. The scheme issued by the MoW on 30 March 1915 (13 officers, 66 NCO's and other ranks and one civilian) was already inadequate only half a year later.

Thus, the C.LVA worked out a revised scheme which he presented to the OLZ. He estimated he would have ca. 30 aircraft available in 1916, considering Trompenburg output and interned aircraft. This would be adequate for three 6-plane units. Therefore, the flight training needed to be expanded and, in addition to Lt. van Heijst, an extra instructor should be appointed (Lt. Versteegh). He estimated to have 20 aircraft in active service with 1½ pilots per aircraft.

On 7 December 1915, OLZ Gen. Snijders submitted a proposal to the MoW:

47 officers 2 C.LVA, lt.adjudant and 45 pilots.
 244 NCO's and other ranks: 3 administration, 2 storage, 17 (senior) technicians, 144 workmen, 77 general duties, 1 medic, 1 civilian engineer
 The OLZ hoped to attain this strength in late 1917.

By now, the construction of facilities was in full swing and a number of hangars had been completed.

Wartime organization

The C.LVA also worked out a wartime organization which the OLZ sent to the MoW. This comprised seven 6-plane Vliegtuigafdelingen (VA = squadron) the organization of which was based on the German Feld- and Festungsfliegerabteilungen: five VeldVA, one for Army HQ (HKV) and one for each of the four army's divisions and the two VestingVA, one for the Waterlinie defense line, and one for fortress Amsterdam.

In addition, a Depot: Staff, Flying School, administration, workshops, storage, reserve equipment and personnel. The personnel of the VA's was calculated:

	VeldVA	VestingVA
Aircraft	6	6
Trucks (aircraft)	6	2
Trailers	4	2
Hangar tents	6	6
Passenger cars	1	1
Storage trucks	1	1
Trucks (cargo)	2	1
Pilots, incl. C.O.	7	7
Observers	6	6
Ground crew	18	18
Drivers	10	5
	41	36

Note: The VestingVA was less mobile than the VeldVA and required less transport.

For a temporary air base, transport was needed: one workshop truck with four mechanics, four dispatch riders with motorcycles, and one administrator. A guard detachment would be provided by the local army units. If required, more transport had to be added: trucks with a dark room, searchlights, wireless, AA guns, etc.

For this organization, 60 aircraft were needed:

5 VeldVA	30
2 VestingVA	12
Depot, trainers	6
Depot, reserve	12

The OLZ argued that the increased inventory required more overhaul and repair work, preferably to be carried out by the LVA itself. This required more skilled personnel. Per aircraft, three men were needed. The storage of parts and spare engines would be increased requiring more administrative work.

In the meantime, a photographic section had been set up, which also required highly-skilled personnel. That also applied to the instrument workshop. The automobile section in due time had to provide transport for three VA's.

The OLZ concluded that considering the existing and expected material situation (Trompenburg output and interned aircraft), the LVA would have ca. 30 aircraft in 1916, and three VA's (6 aircraft each) and a Depot should be organized. Even a fourth VA might be possible - if the LVA expanded more than expected. This plan came to nothing.

Detachments

(1) Gilze-Rijen: Lt. W.C.J. Versteegh, who had spent over a year at Gilze-Rijen, returned to Soesterberg after having crashed his Farman LA3 on 27 September. As observer, he first had Lt. Duinker and then Lt. Land. Sgt. B.J. Boevink and other ground crew had been relieved, but administrator Bram Olthoff remained. Versteegh was succeeded by Lt. L.J. Roeper Bosch who in turn was relieved by Lt. A. Coblijn on 9 December. Versteegh became flying instructor.

(2) Kemperheide: On 2 August, Lt. G.A. Koppen went to the Kemperheide to relieve Lt. L.F.E. Coblijn, who returned to Soesterberg (with cpl. W. Warnaar) and his LA4 which needed an overhaul. Lt. Koppen got help from ritmeester Hekkema. No doubt Hekkema needed to do some flying before acting as observer's instructor. He received flying training, which was forbidden. On the 20th, the C.LVA had written a letter to Hekkema concerning his (no doubt critical) remarks about the LVA's aircraft. The C.LVA had heard rumors, and on 27 September he visited Kemperheide. He caught Hekkema red-handed driving the detachment's truck, which was also forbidden. Apparently Hekkema was severely reprimanded, but could carry on. Whether Koppen was reprimanded, is not recorded, but only he could have been the instructor. Anyway, Koppen was relieved on 5 October by Lt. A.K. Steup, who in turn

was succeeded on 1 December by Lt. P.M. van Wulfften Palthe.

Maneuvers and communications

On 2 July 1915, for the first time, the LVA took part in army maneuvers. Thereafter, the LVA often took part with one or more aircraft. No doubt a number of ground crew accompanied the aircraft. Now, one had to work out how to communicate between aircraft and ground forces. This was especially important with artillery spotting where time was essential. Wireless was not yet available. The first wireless set, a German spark transmitter, was interned in December 1915, and later more were obtained, but it took time to test, copy, and introduce wireless sets. Until then, a useful instrument was the handheld Donath signaling lamp, but it proved impossible to produce its special light bulbs in Holland.

On 17 June, kapt. P.P.D. van Essen (Note 5) (artillery) had a report ready about AOP signaling.

- To indicate the target, the plane had to give a signal (e.g. a flare) while flying over the target. At that moment the plane's position had to be fixed by triangulation.

- For the correction of the shooting skywriting was used. This was better than with a signaling lamp.

- Signals from the ground were given with two rectangular and one square sheet in various positions, which enabled sufficient messages.

The sky writing gear (roetapparaat) was used to give Morse signals, but was never fully reliable. (Note 6) The problem was that the black powder often cluttered because of moisture in the air. Most likely, the roetapparaat was produced by the Artillerie Inrichtingen which also supplied various sorts of black powder, e.g. charcoal, none of which was fully reliable. The system was first used in France before the war and was then quite satisfactory. The roetapparaat soldiered on until 1917 when wireless became sufficiently reliable. Other means of communication were flares and message cases, which could be thrown from the plane or fired with a special pistol. For messages from the ground, a quite satisfactory system with sheets was developed.

Army co-operation included the use of airstrips near headquarters where the aircrews received their instructions and delivered their observations. Initially, HQ personnel were not quite aware how to lay out the

strip. Kpl. Warnaar remembered an eventful landing near Arnhem: Lt. Coblijn was landing far too fast and elected to go around. Airborne again, he saw the smoke from the chimney of the field kitchen indicated that the wind-indicator sheets on the ground pointed in the wrong direction, and Paris-born Coblijn broke out in colorful swearing in French.

In May, June, and July, Lt. Versteegh flew with a naval officer over Wielingen waters near Vlissingen to check whether minefields and submarines were visible from the air. They were not, unless a submarine was using its periscope.

In July, Lts. Steup (pilot) and Daendels went to Geldrop where methods were tested for communication with artillery spotting. The results seemed satisfactory. In August, Lts. Hofstee and Roeper Bosch (observer) took part in artillery exercises at Harskamp army camp.

In late September, captain Van Essen gave AOP instruction. Regrettably the roetapparaat performed not as expected. Soot cluttering remained a problem.

Armament.

In 1915, sgt. ir. N.E. Groeneveld Meijer presented his semi-automatic bombsight, which was adopted by the LVA (Note 7).

Both bomb and dart throwing gear were satisfactory tested on 21-22 September, and practice bombs were first dropped on the 25th. Nothing was mentioned about dart throwing. The darts and containers were made at Soesterberg. This silent and very lethal weapon was first used by the French AF. On 5 October, the Groeneveld Meijer bombsight was tested for the first time.

The C.LVA ordered 50 practice and 500 live bombs from the Artillerie Inrichtingen (AI), but none had arrived by the end of the year. A problem with the practice bombs was that they often vanished in the sand and were lost. The AI may also have supplied the bomb racks.

On 22 November, a Madsen rifle was fitted on a Farman. The mounting was satisfactory and 19 more were ordered. By the end of the year, neither rifles nor mountings had been received.

Interned aircraft

Up to December 1915, 15 landplanes had been interned, of which, nine were bought: three German, five British, and one French. The remainder were wrecks, burned by the crew or already too obsolete

for use (Albatros Taube, and Farman Shorthorn). Two interned Avro 504 proved to be good trainers.

On 3 October, Fl.Sub.Lt. James Erroll Dunsford Boyd force landed in Holland with his RNAS REP Parasol 8460 (later LA23):. He was allowed to return to Canada in 1917. (Note 8)

Naval air service.

In 1914/15, apart from some wrecks, the navy interned four seaplanes, of which three were purchased (White & Thompson no.3, Friedrichshafen FF.19 and FF.29). The fourth, a Short 830, was unusable, but its engine was bought for the LVA. A seaplane base was built at Schellingwoude near Amsterdam,. The first seaplanes were flown there in 1916.

At sea, later-to-be famous airmen were met. On 19 September, the lifeboat *Brandaris* (Terschelling) rescued Oberleutnant Wolfgang von Gronau and Matrose Menzing who were having problems with their Friedrichshafen FF 33E #471. The plane was run down by the lifeboat and Von Gronau and Menzing were brought ashore and soon released, being shipwrecked mariners. (Note 9)

Glenn Martin aircraft for the NEI army and the Navy

On 30 May 1914, an aviation unit had been formed in the Netherlands East Indies (NEI) - for the time being without aircraft. The Brouckères, ordered in Belgium, would never arrive. After the PVA (Proefvliegtuigafdeling = experimental unit) had been organized, but aircraft were still needed. As WW1 had started, nothing was available in Europe. Thus, a committee was sent to the USA to purchase aircraft. This committee consisted of capt. G.E. Visscher and the only available pilot, 1st Lt. H. ter Poorten (who had trained with De Brouckère in Belgium). They selected the Glenn Martin TA and two were ordered as floatplane. To start with floatplanes meant that for the time being no airfield was needed. For each plane a wheel set was ordered for future use.

The Martins arrived late in 1915, and on 6 November Poorten made the first flight with the TA1, which was soon converted to a landplane. On 14 February 1916, Ter Poorten crashed TA1. He was badly injured and his passenger, army commander lt.gen. J.P. Michielsen, was killed.

On 30 November 1915, lt.gen. Michielsen had asked permission to buy 12 more Martins and 6 spare

engines, and this was permitted by the colonial government.

Apparently, the colonial purchase encouraged the navy in Holland also to look for aircraft in the US. LTZ H.G. van Steijn was sent there to buy 6 seaplanes. Before he left, it had been decided to order these aircraft via Trompenburg. Van Steijn ended up at Glenn Martin and selected the S-type seaplane. A contract for four was concluded by aviation pioneer

ir. G.P. Küller, (Note 10) who had been sent as representative to the US by Trompenburg. Küller, who had stopped flying late 1911, nevertheless made some flights with Martin aircraft. The available funds allowed only four aircraft.

Frits Gerdessen (#12) Netherlands.

Notes

1. OMSD = Officier Marine Stoomvaart Dienst (Officer Naval Steam Service = engineer).

2. In 1973, the AI was split into Eurometaal (munitions etc.) and Hembrug (precision machine tools). Eurometaal also made machinery for civil use. It was taken over by Rheinmetall and closed in 2003. Hembrug was privatized in 1983 and moved to Haarlem, where it still produces precision equipment.

3. The aviation enthusiast Gen. Snijders and capt. Walaardt Sacré got on very well. The former had been the latter's teacher in the Military Academy (both were engineers), and they had worked together in the Aero Club.

4. The C.LVA's handwriting is hard to read - to say the least.

5. Kapt. P.P.D. van Essen (1870-1925) was involved in the improvement and modernization of the field artillery. An artillery barracks and an artillery regiment were named after him.

6. See note #4 in SAFO #150.

7. SAFO #141. "Holland's Top Secret Bombsight."

8. He became known as "The Lindbergh of Canada" when he crossed the Atlantic 9/10 October 1930 from Harbour Grace (Newfoundland) to Tresco, one of the Scilly Islands, with navigator Harry Connor in the single-

engine Bellanca WB-2 NR237 "Maple Leaf".

9. Von Gronau (1893-1977) later became famous with long-distance flights. In 1939 Gen.maj. Von Gronau was posted to Japan as air attaché. He returned to Germany in 1947.

10. Ir. G.P. (Gijs) Küller (1881-1959), a mechanical engineer, started flying in France late 1909 where he obtained FAI license #46 on 7 April 1910. He flew a lot of demonstrations with Antoinette monoplanes in 1911 in Malaya and Java (NEI). On return, he stopped flying. It had cost him large sums of money and he considered it to be too dangerous.



Lt. Koppen with the Albatros B.I LA12. The Albatros B-types were highly regarded.



Lt. J. Jongbloed with Avro 504 LA13, with the serial on the rudder. The Avro 504's served until 1919.



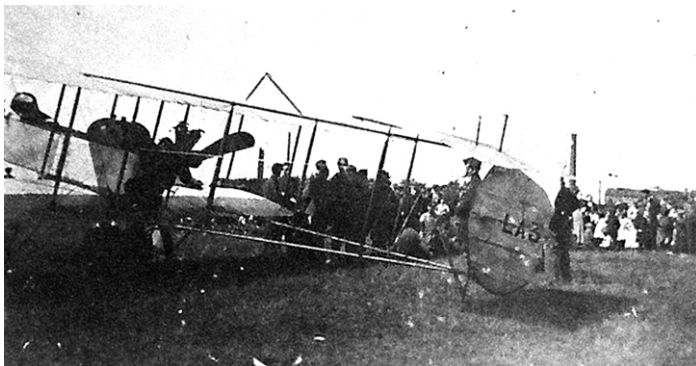
Erroll Boyd in 1916 aboard a ship, apparently when he was going on leave to the US. He looks quite pleased.



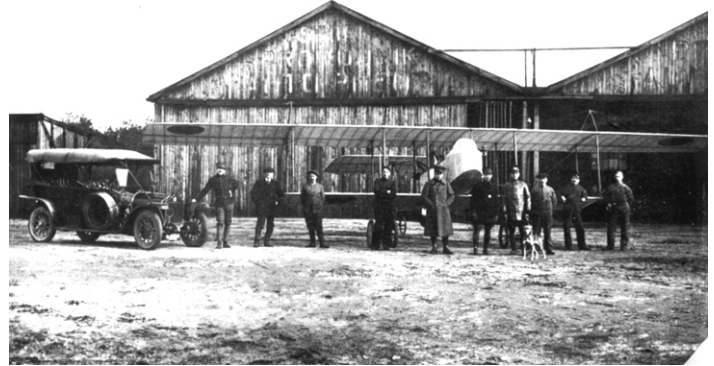
Cpls. W. Warnaar (left) and J.W. van der Drift with a Farman HF.20.



HF.20 LA2 crashed on 27 September 1915. Lt. M.L.J. Hofstee (pilot) was badly wounded and had to quit flying. Observer Lt. H. Polis was also wounded but soon recovered.



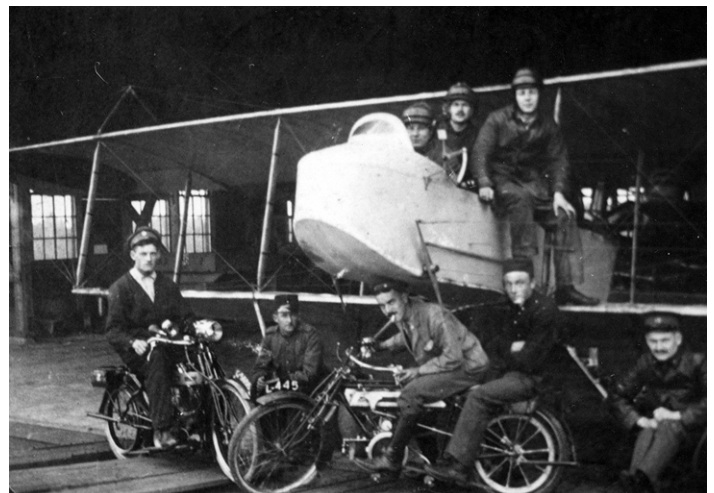
August 13, 1915. Lt. Versteegh was in Bergen op Zoom with HF.20 LA3.



Detachment Gilze-Rijen with the LA3, a truck and personnel. 4th from right Lt. Versteegh. 2nd from left Bram Olthoff.



Bram Olthoff (sitting at right) mailed this postcard to his sister Miss A.A. Olthoff from Gilze-Rijen 7 September 1915. The ground crew works on two Gnoms. On the floor some practice bombs.



An HF.22 in the hangar at Kemperheide with personnel, 12th October 1915.



HF.22 LA11 in front of the hangar at Kemperheide with personnel and visiting girls.



HF.22 LA15 was delivered by Trompenburg the 1st October 1915.



Albatros B.I LA12 lined up during a visit by Gen. Snijders (date unknown).



Farman LA11 with a Madsen carbine, bomb racks and under the fuselage a "roetapparaat".



An Avro 504 in the same line-up. Gen. Snijders with stick and short coat.



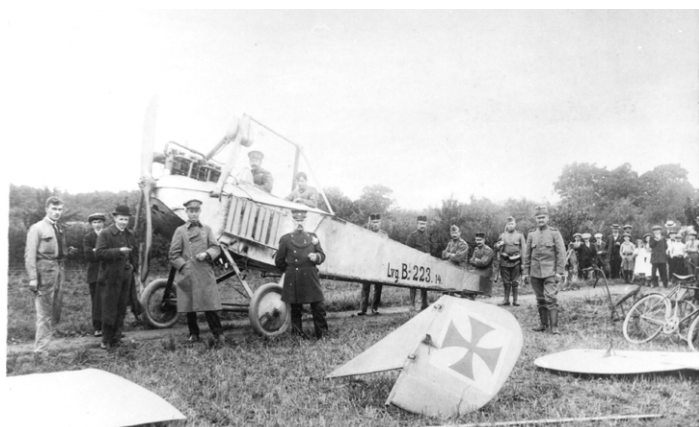
Naval HF.22 M2 was delivered in October 1915. In the cockpit LTZ K.W.F.M. Doorman (Died 27 Feb. 1942 as rear admiral in the Battle of the Java Sea.)



The arrival of a foreign aircraft attracted often a large crowd. Here B.E.2C 1677 at Axel 5 June 1915. The crowd allows us to see the serial. #1677 became LA24.



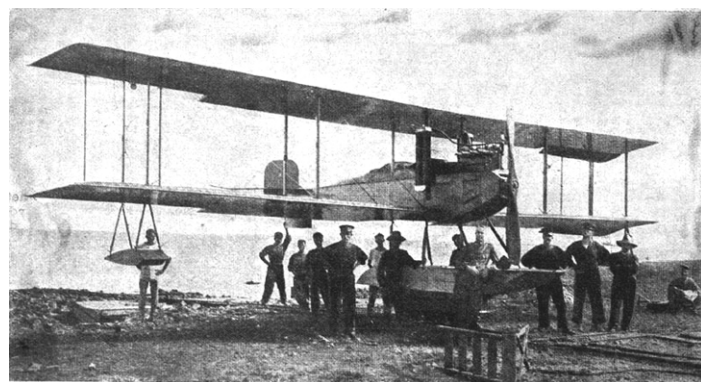
Fl.Lt. Erroll Boyd's REP #8460 with guards and neighbours at Zuidzande the 3rd October 1915. He had been hit by Flak over the Belgian coast. The plane served as LA23,



LVG B.II 223/14 (later LA25) arrived in good shape at Venlo the 28th August 1915. The crew got lost on a training flight. At left with bowler hat ing. Vreeburg, at right sgt. Boevink.



Friedrichshafen FF 29 205 beached at Schiermonnikoog the 21st November 1915. With the Navy it served as S-1.



The first NEI Martin TA in 1915.

Current KPAF Aircraft Inventory

KPAF Forces by Role and Equipment Type – 982 Aircraft Total/603 combat capable (not all operational), as of 2014.

Strategic Bombardment: 2 Regiments with 80 Harbin H-5 (only 13 IL-28R Beagles operational)

Multi-role and Air Defense Fighters: 3 Regiments with 95 fighter aircraft

- 57th Aviation Regiment (3 sqns) with 40 Fighter aircraft
 - 10 VPK Mapo MiG-29SE Fulcrum-C,
 - 25 Mikoyan Gurevich MiG-29A Fulcrum-A,
 - OCU: 5 Mikoyan Gurevich MiG-29UB-12 Fulcrum-B
- 58th and 60th Aviation Regiments (4 sqns) with 55 Fighter aircraft
 - 36 Mikoyan Gurevich MiG-23ML Flogger-G,
 - 10 Mikoyan Gurevich MiG-23P Flogger-G,
 - OCU: 9 Mikoyan Gurevich MiG-23UB Flogger-C

Air Defence Interceptors: 6 Regiments with 287 fighter aircraft (180 MiG-21 and 107 MiG-17F)

- 56th Guards Aviation Regiment (3 sqns) with 34 MiG-21bis Fishbed-L,
- 86th and one unknown Regiments (5 sqns) with 55 MiG-21MF Fishbed-J,
- 46th Aviation Regiment (2 sqns) with 30 Chengdu F-7B Airguard (Fishbed-C),
- 1 Squadron with 10 MiG-21F-13 Fishbed-C (serving with 72nd AR),
- 1 Squadron with 15 MiG-21PFM Fishbed-F (serving with 60th AR),
- 4th and 11th Aviation Regiments (6 sqns) with 107 Shenyang F-5 (MiG-17F Fresco-C),
- 3 OCUs with 11 FT-7A (MiG-21U Mongol-A) and 25 MiG-21UM Mongol-B

Ground Attack Fighters: 6 Regiments with 173 fighter/ground attack aircraft

- 55th Aviation Regiment (2 sqns) with 36 Su-25:
 - 32 Sukhoi Su-25K Frogfoot-A,
 - OCU: 4 Sukhoi Su-25UBK Frogfoot-B and 4 Sukhoi Su-7U Moujik
- 35th and three unkn Regiments (8 sqns) with 97 Shenyang F-6C (MiG-19S Farmer-C)
- 72nd Aviation Regiment (3 sqns) with 40 Nanchang A-5 Fantan-A (Q-51A)

Transport Regiments with 222 transport aircraft

- Air Transport Regiment/Air Koryo with 12 heavy transport aircraft
 - 1 Tupolev Tu-154 Careless (Air Koryo)
 - 2 Tupolev Tu-134 Crusty (Air Koryo)
 - 2 Tupolev Tu-204 (Air Koryo)
 - 3 Ilyushin IL-76TD Candid (Air Koryo)
 - 4 Ilyushin IL-62M Classic (2 in DPRK Government VIP Livery/markings)
- Tactical Transport Squadron/Air Koryo with 10 medium transport aircraft
 - 7 Antonov An-24 Coke (3 An-24RV Air Koryo)
 - 2 Antonov An-148 (Air Koryo)
 - 1 Ilyushin IL-18D Coot-A (Air Koryo)
- Light Transport: 12 Special Ops Sqns with 200 light transport aircraft (An-2/Y-5 Colt)
 - 90 Shijazhuang Y-5 Colt,
 - 110 Nanchang Y-5 Colt

Training Regiments with 121 training aircraft

- Basic Flying Training: 4 squadrons with 54 training aircraft
 - 10 Nanchang BT-5 (CJ-5/Yak-18)
 - 44 Nanchang BT-6 (CJ-6A)
- Advanced Flying Training: 8 squadrons with 67 training aircraft
 - 12 Aero Vodochody L-39C Albatros
 - 35 Shenyang FT-2 (MiG-15UTI Midget)
 - 20 Shenyang FT-5 (MiG-17 Trainers)

Helicopter Regiments with 373 helicopters

- Attack/Assault Helicopters: 1 Regiment with (3 sqns) 20 Mil Mi-24D Hind-D,
- Attack Helicopters: 4 Regiments with 139 PZL Mi-2US/URN Hoplite gunships,
- Light Anti-Armour Attack Helicopters: 1 Regiment equipped with
 - 10 Hughes 300C training helicopters

17 modified Hughes 500D anti-tank attack helicopters
 60 modified Hughes 500E anti-tank attack helicopters
 Assault Transport Helicopters: 2 Regiments equipped with
 40 Mil Mi-17 Hip-H (Mil Mi-8MT/TV),
 20 Mil Mi-8 Hip-C
 Utility/Transport Helicopters: 1 Regiment with 48 Harbin Z-5 (Mil Mi-4A Hound-A)
 1 Heavy-lift Helicopter Squadron with 4 Mil Mi-26 Halo;
 VIP Helicopter Squadron with 10 Mil Mi-17 Hip-H
 Naval Support/ASW Helicopters: 1 Battalion with 5 Mil Mi-14PL Haze-C

Compiled by Douglas Dildy (#844), USA.



The DPRK acquired 20 MiG-29 “Fulcrum-As” and four MiG-29UB “Fulcrum-B” two-seaters from the USSR in 1988, augmented by six MiG-29SE “Fulcrum-Cs”, probably from Belarus, during the next decade. Reportedly flown by the 57th Aviation Regiment, the “Fulcrums” – one seen here with Kim Jong-Un in a publicity/propaganda photo – are painted in a rather odd gloss green overall with azure-blue undersides. (North Korean News Agency)

Air Koryo: North Korea’s National Airline

If the KPAF is one of the world’s “small air forces”, then Air Koryo – the DPRK’s state-owned airline – has to be one of the world’s “smallest airlines”. With one to three examples of eight different types of Soviet/Russian built airliners and transports, it certainly fits that title. Using a handful of KPAF Li-2/C-47s, it was established as SOKAO (Soviet–North Korean Airline) in 1950 as a joint DPRK-USSR concern connecting Pyongyang with Aeroflot services to/from Moscow via Vladivostok and Khabarovsk. Operations were suspended during the Korean War, but resumed in 1953 as UKAMPS (for Ministry of Transportation for DPRK), which operated from Pyongyang to

Shenyang and Beijing. The next year it was reorganized and renamed “Chosŏn Minhang—Korean Airways”, under the control of the Civil Aviation Administration of Korea. Attempting to become “a proper airline”, in March 1992 it was renamed Air Koryo.

For the fourth year in a row, in 2015 Air Koryo was selected the very worst airline in the world by Skytrax, a UK-based aviation consulting company that ranks the world’s airlines according to criteria such as aircraft age, efficiency, in-flight meals and service. Air Koryo came last in a list of 681 carriers, receiving the only one-star rating awarded. Douglas C. Dildy (SAFCH #844) USA.



Despite its increasing obsolescence, the MiG-21 Fishbed remains the most numerous type in the KPAF inventory. The most capable is the MiG-21bis "Fishbed-L" – seen here during an afterburner take-off – 38 of which were acquired from Kyrgyzstan in 1999. The MiG-21bis is powered by the uprated 15,650 lb thrust (in afterburner) Tumanskiy R25-300 turbojet engine and features numerous avionics advances; the "Fishbed-L" variant was built for the Soviet PVO-Strany air defence forces and was equipped with the Lazur GCI system, while the "Fishbed-N" variant was built for V-VS Frontal Aviation units. These are operated by the historic 56th "Guards Taejon" Aviation Regiment, based at Toksan AB, near Hamhung, on North Korea's east coast. (North Korean News Agency)



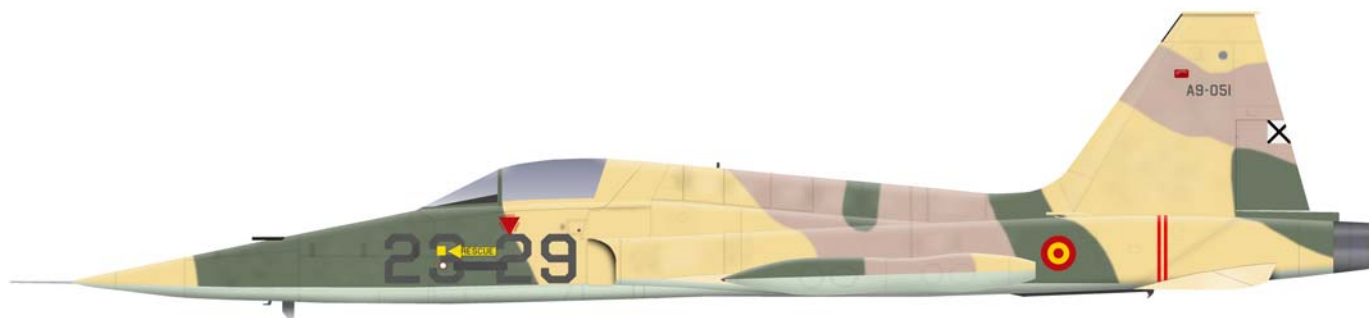
The KPAF retains a number of ancient MiG-15bis "Fagots" as jet transition and fighter trainers. These are stationed with a jet transition training regiment at Samjiyon – where they operate alongside Shenyang FT-2 (Chinese versions of the MiG-15UTIs) and FT-5 (Chinese-developed two-seat version of the MiG-17) – and an Operational Conversion Unit at Namsi. (North Korean News Agency)



By today's standards, the MiG-17F is, of course, patently obsolete, yet the KPAF still uses some 107 Chinese-built Shenyang F-5 "Fresco-Cs" in its 4th and 11th Aviation Regiments. These units were part of the 3rd Air Combat Division and based at Taetan and Hyonni, just north of the DMZ. If they are still operational, in the event of a conflict with South Korea, they would primarily be used in the close air support role. (North Korean News Agency)

The F-5 Abroad (Part 2)

Tim Callaway



CASA SF-5A of the Spanish Air Force. Keith Draycott

Malaysia

The first deliveries of 14 F-5Es and two F-5Bs to the Royal Malaysian Air Force started in June 1975, followed by three more F-5Fs purchased in 1978, the original F-5Bs being sold to Thailand. Two RF-5Es were also purchased in September 1980 to fill the reconnaissance role. Additional aircraft to replace losses saw three F-5Es and one F-5F being delivered between 1979 and 1985. The last few F-5Es delivered had the F-20s Tigershark nose, but by 2000 the type had been withdrawn from service and placed in operational reserve storage. In 2003, it was announced that 3 F-5Es, 2 RF-5Es and 2 F-5Fs would be returned to service, work which was completed in 2004. Some avionics and camera upgrades were included in the revision work that returned the aircraft to service with 12 Squadron at Butterworth Air Force Base.

Mexico

Mexican Air Force was supplied with ten F-5Es and two F-5Fs between August and November 1982. The aircraft have been used for intercepting drug carrying illegal flights over Mexico since their introduction. A GPS navigation system and a longer range version of the AN/APQ-159 radar have been fitted as upgrades. While further upgrades and replacements have been proposed, none as yet have been accepted so the F-5 will remain in service for the foreseeable future.



020 – One of the two Northrop F-5Fs of the Mexican Air Force in 100th Anniversary commemorative markings. Ivan Peña

Morocco

The Royal Moroccan Air Force took delivery of 17 F-5As, two RF-5As and four F-5Bs between 1966 and 1971. Six more F-5As were supplied by Iran with US agreement in April 1976. The aircraft were used in the Polisario War in Western Sahara between 1976 and 1991, conducting ground attacks against the Polisario Liberation Front. In 1979, 16 F-5Es and four F-5Fs were ordered, these aircraft being equipped with air to air refuelling probes and delivered by August 1981. To replace aircraft lost in the war, ten more ex-USAF F-5Es were purchased in 1989 and the remaining eight F-5As, two RF-5As and two F-5Bs

were upgraded to F-5E avionics standard by Sogerma in France. From 2001 to 2004, 24 Moroccan F-5E and Fs were further upgraded by Sogerma and IAI with the FIAR Grifo F Plus radar, ECM pods, radar warning receivers, multifunction and head up displays and a new weapons delivery and navigation system. Known as the F-5E/F Tiger III, the aircraft can now use beyond visual range missiles.



021 – A Northrop F-5E Tiger III of the Royal Moroccan Air Force during air to air refuelling. USAF

Netherlands

The Royal Netherlands Air Force ordered 75 Canadair CF-5As (NF-5As) and 30 CF-5Bs (NF-5Bs) in 1967, the aircraft being partly built in the Netherlands as part of the deal, the last ones being delivered on March 20 1973. Upgrades to the aircraft included the addition of chaff and flare dispensers and radar warning receivers, as well as some upgraded avionics. The last of the type were withdrawn from service in March 1991, having been used as fighter bombers and day fighters until replaced by the F-16. Of these, 45 NF-5As and 16 NF-5Bs were purchased by Turkey in 1989, 16 of the single seaters being used as spares airframes. As well as those, eleven NF-5As and one NF-5B went to Greece, the single seaters again being mostly used for spares, and one NF-5A and six NF-5Bs were sold to Venezuela.



022 – Four of the Canadair NF-5Bs of the Royal Netherlands Air Force. Luigino Caliaro



023 – A sideview of a Canadair NF-5A of the Royal Netherlands Air Force. Keith Draycott

Norway

Norway specified their own version of the F-5A for the Royal Norwegian Air Force in an order placed in 1964. This was to have an arrestor hook, the ability to use JATO equipment and the ability to fire the Bullpup missile among other detail changes. Known as the F-5A(G) and F-5B(G), 56 single seat and 8 two seat aircraft were ordered, deliveries beginning in February 1966. In February 1968, a further 10 F-5A(G)s and two more F-5B(G)s were ordered, as well as sixteen RF-5A(G) reconnaissance aircraft. A new Ferranti lead computing optical sighting system was fitted to the fleet in 1973, but in 1982 cracks in the engine air intakes were found, necessitating a repair programme that grounded 60% of the fleet. A Service Life Extension Programme (SLEP) was carried out between 1984 and 1986 which included corrosion protection and airframe refurbishment. This was followed by the addition of chaff and flare dispensers and radar warning receivers in 1987. In 1991, the cockpits of seven F-5A(G)s and 8 F-5B(G)s were rebuilt to resemble those of the F-16s then in service in Norway, with all the attendant head up and multifunction displays, improved databus and avionics. As the F-16 was introduced into service,

F-5s began to be retired, the first being the RF-5As in 1982, six of which were transferred to Turkey. After this, twenty five more Norwegian F-5As went to Turkey, nine to Greece and one was used in the US to build the Grumman X-29A forward swept wing demonstrator. The fifteen F-5s with F-16 style cockpits were used to develop the Penguin anti-ship missile, before they too were retired in 2007, five going to maintenance schools, the rest placed in storage.



024 – A Royal Norwegian Air Force Northrop F-5A(G) landing using its drag chute. Jan Jørgensen

Philippines

Between 1965 and 1967, 19 F-5As and three F-5Bs were delivered to the Philippine Air Force. These were followed in 1989 by three ex-Taiwanese F-5As and a single F-5B, numbers further bolstered by what is believed to be eight ex-Korean F-5As and two Jordanian F-5As which were delivered during the 1990s. The aircraft were used against insurgents on Luzon and in the Visayas Islands between 1971 and 1977 in the ground attack role, but they were not involved in the unrest that brought down the Marcos government in 1986. Several were captured during a military coup in 1989, but were returned when the rebels surrendered in December of that year. By 1990, only eight F-5As and two F-5Bs remained airworthy, taking part in the defence of the Spratly Islands against Chinese interest in 1992 and 1995. The last F-5s were retired on September 30 2005 at a special ceremony, fifteen surviving airframes being stored at Clark and Basa Air Bases.



025 – A Northrop F-5E of the Philippine Air Force at Clark Air Force Base in 1982. USAF

Portugal

The Portuguese Air Force leased 12 T-38A aircraft from the USAF to replace their trainer fleet, the first six aircraft being delivered in 1977. The aircraft gave reliable service in this role until they were retired in 1993.



026 – One of the twelve Northrop T-38A talons leased by the Portuguese Air Force in 1977. SDFA-AH

Saudi Arabia

Altogether, 75 F-5Es, 20 F-5Bs and 24 F-5Fs were delivered to Saudi Arabia between 1972 and 1978, a supply contract that included Northrop setting up a training and support centres at Dhahran and Taif Air Bases to enable Saudi Arabia to become completely self-sufficient in its operation of the aircraft. The Saudi F-5Es were well equipped, being fitted with air refuelling probes, chaff and flare dispensers, a radar warning receiver and the ability to carry an ECM pod, not to mention a manual laser

designator and a host of other avionics upgrades from new. JATO capability was provided, as was the ability to carry the AGM-65A Maverick missile and laser guided bombs. The F-5Es replaced the BAC Lightning Mk 53 in the attack and reconnaissance roles. During the Gulf War of 1991, Saudi F-5Es flew close air support and interdiction missions against Iraqi forces in Kuwait, one being lost to ground fire on February 13. Between 1996 and 2001, the F-5Es and Fs were converted to F-5S and T standard by Singapore Technologies Aerospace (STAero). This meant deleting one cannon from the aircraft, in the case of the F-5Fs the only cannon, to make room for a completely new suite of avionics, including the FIAR Grifo F radar and a completely new glass cockpit, databuses, weapons delivery and inertial navigation systems. The leading edge root extensions were also enlarged to improve manoeuvrability. In 1997, the nine remaining RF-5Es were fitted with a GPS based navigation system by Northrop Grumman, the airframes were also strengthened to extend the service life of the type. Eight of these then received the full STAero upgrade in 1998, being redesignated RF-5S. With the introduction of the F-15, the Tornado and, in 2007, the Typhoon, the F-5 fleet were retired to storage except in the trainer role.



027 – Two Northrop F-5Es of the Royal Saudi Air Force with one of their C-130H tankers. RSAF

Singapore

The Republic of Singapore ordered 18 F-5Es and three F-5Fs in 1976, the first aircraft being delivered in 1979. Six more F-5Es were purchased in 1980, featuring an extended dorsal fin and wing leading edge extensions as well as the F-20s Tigershark nose, followed by three more F-5Fs in 1982 and another six F-5Es in 1985. The last batch of five F-5Es were

delivered in 1989, since the production line had ended, these aircraft were built from Northrop's vast stocks of spare parts. STAero converted eight F-5Es to RF-5E Tigereye reconnaissance aircraft in 1990 and 1991. In 1991, STAero won the contract to upgrade the Saudi Arabian fleet as described above. Following this success in 1994, seven former Jordanian F-5Es were purchased and, along with the existing fleet, converted to the F-5S standard for the Republic of Singapore Air Force, creating 32 F-5Ss, nine F-5Ts and eight RF-5Ss. With the introduction of the F-15S and F-16C into service, three of the F-5 squadrons were re-equipped, but the type will form an important part of Singapore's defences for many years to come.



028 – A Northrop F-5S of the Republic of Singapore Air Force on take off. Australian DoD



029 – A side view of a Northrop F-5E of the Republic of Singapore Air Force in the early camouflage scheme. Keith Draycott



030 – A side view of a Northrop F-5S of the Republic of Singapore Air Force in the current camouflage scheme. Keith Draycott

South Vietnam

As described in detail earlier in this magazine, from 1969 during the Vietnam War, the Vietnam Air Force (VNAF) received 158 former US, Korean, Iranian and Taiwanese F-5A Freedom Fighters, 10 RF-5As and 8 F-5Bs trainers. The F-5As were mostly used in ground attack and close support missions over South Vietnam against insurgent North Vietnamese forces. Later, 55 F-5E Tiger IIs were supplied from the US and equipped two Squadrons of the VNAF, but the surrender of April 30 1975 meant that most of the airworthy F-5s were evacuated to Thailand. A number were captured by the Vietnam People's Army on airfields that had been overrun.



031 – A Vietnam Air Force F-5A heads north of the DMZ to work with a FAC against enemy troop movements, armed with Mark-82 bombs and napalm. Dexter Martin via Warren Thompson

Soviet Union

Several F-5Es were received from captured examples in Vietnam and Ethiopia for performance tests and evaluation flights. They were tested in mock combat which helped shape the next generation of Soviet fighters.

Spain

CASA of Spain began licence production of the F-5 in 1968, the first nine aircraft being assembled from parts supplied by Northrop, every one after that being completely manufactured at Getafe. These aircraft had their own designations, the 18 fighters on order were known as SF-5As, the 18 reconnaissance aircraft the SRF-5A and the 34 two seat trainers the SF-5B. The first aircraft were handed over to the Spanish Air Force on June 19 1969 and production was completed in December 1972. In 1990, CASA in

cooperation with Bristol Aerospace of Canada carried out a SLEP on 23 of the SF-5Bs, refurbishing and strengthening the wings, fin, lower fuselage and undercarriage, this work being completed in 1995. The SF-5As were all withdrawn from service in 1992, the SRF-5As in 2003. Just prior to this, the SF-5Bs underwent a two stage modification programme to keep them in service as fighter trainers until 2024. Performed by CASA and IAI, the first part of the upgrade includes a complete avionics suite, new computers, head up display, navigation and communication systems. The 22 new trainers can also carry the AIM-9J version of the Sidewinder and are known as SF-5Ms, the last one being delivered in May 2007. Meanwhile, the second, structural strengthening phase of the upgrade began in 2003, with the first delivery of a fully modified SF-5M taking place in 2005 and the last one expected in 2016.

Sudan

The US agreed to supply the Sudanese Air Force with 10 F-5Es and two F-5Fs in 1980. Only two of the F-5Es were ever delivered, in June 1984, nearly two years after the two F-5Fs which had arrived in October 1982. Both of the F-5Es and one of the F-5Fs were destroyed in crashes between 1984 and 1985 and the remaining F-5F was given to Jordan in exchange for ammunition for the Sudanese Army.

Switzerland

The full story of the production of the F-5 in Switzerland is told elsewhere in this magazine, 98 F-5Es and 12 F-5Fs being built by the Swiss Federal Aircraft Factory in Emmen.

Thailand

The Royal Thai Air Force received its first F-5As, RF-5As and F-5Bs in 1968 as part of an agreement to allow USAF units to be based in Thailand for operations against Vietnam. These were followed by 34 F-5Es and six F-5Fs delivered between 1977 and 1981, with ten more F-5Es purchased from the USAF in 1988. In Thai service, the F-5A models are known as the B.Kh.18, the F-5E variants as the B.Kh.18A. In 1985, Thailand began an upgrade programme to 20 of its F-5Es, including a head up display and weapons aiming computer, inertial navigation system, radar warning receiver and chaff and flare dispensers. A further 18 of the F-5Es and Fs were partly upgraded with only the head up display and navigation system.

The aircraft were then used for both the fighter and ground attack roles. The F-5As and Bs were all retired by the mid-1990s, leaving a reduced fleet made up of 11 F-5E and Fs that underwent a Capability Improvement Programme in the late 1990s, and 16 of the F-5T Tigris, a much improved version of the aircraft upgraded by IAI. The F-5T Tigris has the Dash helmet mounted cueing system, a glass cockpit, the Elbit EL/M-2032 multimode radar and can be armed with both Python III and 4 air to air missiles. The F-5Es and Fs were supposed to retire in 2012 with the introduction of the second tranche of Saab Gripens into service, but this has met a financial delay so they are still in service as this is written. The F-5T Tigris is intended to remain in service until between 2015 and 2020.



035 – A Northrop F-5F of the Royal Thai Air Force in 30th Anniversary commemorative markings. Dave Jeffreys

Tunisia

The Tunisian Air Force ordered eight F-5Es and four F-5Fs in 1981, the last aircraft being delivered in 1984. When the UK based USAF Aggressor unit was closed, five F-5Es were transferred to Tunisia in 1989. Sixteen of these aircraft are still in service today with 15 Squadron at Bizerte-Sidi Ahmed Air Base.

Turkey

Altogether 241 Northrop F-5s and 73 T-38A Talons have been supplied or purchased by Turkey over the years. In 1964, the first F-5As, RF-5As and F-5Bs were ordered, deliveries beginning the following year. By 1989, 100 F-5As, 57 RF-5As and 22 F-5Bs had been acquired directly from the US, or via the US, or directly from its Allies. Korean, Libyan, Norwegian

and Taiwanese F-5s all ended up serving with the Turkish Air Force. To supplement the operational trainer versions, in 1979 the first of 73 T-38A Talons were delivered from the US. In 2007, 66 T-38s were still in service and Turkish Aircraft Industries (TAI) began an avionics modernisation programme to upgrade 55 of them. Called the Ari, or Bee, the upgrade project includes a completely glass cockpit with a head up display, new computers, hands on throttle and stick controls and modern navigation and communications equipment. The first upgraded T-38, known as a T-38M, was delivered in April 2012, the last aircraft should be completed by the end of 2013. In 1989 as they were being retired by the Royal Netherlands Air Force, 45 NF-5As and 16 NF-5Bs were purchased by Turkey, 16 of the NF-5As being used as spares airframes, not intended to fly. The NF-5As and Bs became the mount of the world famous Turkish Stars national aerobatic team. In 1998 a contract was signed between the Turkish Air Force, IAI, Elbit and STAero to upgrade some of the F-5 fleet to F-5-2000 standards. Altogether 54 F-5s were modified under the programme, 18 F-5As, seven F-5Bs, 18 NF-5As and 11 NF-5Bs. The two part project began with a structural life extension and reinforcement programme, fitting or indeed building new parts where required. Then the aircraft were given a complete avionics and systems upgrade, including a full glass cockpit and head up display. The first F-5B began the upgrade in May 1999, making its first flight on April 17 2001. Only these upgraded aircraft remain in service today, with the Turkish Stars and with a fighter training squadron.



036 – A Northrop T-38A Talon of the Turkish Air Force. These have mostly been upgraded to T-38M standard. Luigiino Caliaro

Venezuela

In 1969, Venezuela were looking for a replacement for the F-86K Sabre as a front line fighter. Canada had a number of CF-5 airframes in storage that it offered to Venezuela, 16 CF-5As and two CF-5Ds being drawn from stocks, two more CF-5Ds being new build aircraft. The little fighters were redesignated as VF-5As and VF-5Ds, nicknamed Zancudo (mosquito) in Venezuelan service where they were popular and reliable. Two of the VF-5As were modified to be able to carry four cameras a detachable nose to fulfil the daylight reconnaissance role, in which guise they were known as RVF-5As. In 1991 six ex-Netherlands Air Force NF-5Bs and one NF-5A were purchased to replace losses, then, in 1993, STAero was chosen to upgrade 13 single seat and a single two seat aircraft from the fleet. A new mission computer, head up display, air refuelling probe, TACAN, identification friend or foe (IFF) system and chaff and flare dispenser were added, along with a complete airframe and engine overhaul. Today, eight VF-5As and three VF-5Ds are still in service and are pending another upgrade which has been delayed, but will enable them to stay in service for many years.



039 – A Canadair VF-5A of the Venezuelan Air Force . Juan Carlos Cicales



040 - A Canadair VF-5D of the Venezuelan Air Force. Ivan P Nesbit

Vietnam

Vietnam People's Air Force (VPAF) used over 100 captured examples of the F-5A and E after the Vietnam War. One F-5E, 73-00867, was sent to the Soviet Union for comparative trials against Soviet combat aircraft. The F-5 served in the VPAF for many years despite the lack of spares and support, being a relatively simple and reliable aircraft. In 1979, F-5s supported the invasion of Cambodia by Vietnam, flying close support missions. When China reacted to their invasion with a border war known as the Sino-Vietnamese War, the F-5s flew both air defence and ground attack sorties. A number of F-5s are still on display around Vietnam, in parks and museums.

Yemen

With Saudi Arabian support and at the request of the US, in April 1979 12 F-5Es from the undelivered Egyptian order were sent to North Yemen to provide an air defence force. Saudi Arabia also made four of its F-5B trainers available for continuation training for the pilots deployed on this mission. Over 80 pilots and ground crew were sent from Taiwan to operate the aircraft as there were no jet pilots in North Yemen at the time. The pilots were withdrawn in 1991, a year after Yemen unified, due to their change of allegiances during the Gulf War. The aircraft remained, with a trained cadre of personnel to fly and maintain them. Today it is thought 8 F-5Es and 3 F-5Fs are still airworthy.



DÊSTE FATO NÃO EXISTE FOTO

A tarde estava quente e enfumaçada, reboando ao longe, os tiros de canhão e as explosões de granadas, que em simuladas mensagens de morte iam certos atingir seus alvos. Era hora do treinamento do tiro real dos adestrados rapases do Exército, e o campo de Geri cinó estremecia diante daquela demonstração de potência bélica.

Shot Down

Jorge Delgado P.

Every pilot knows that once they take off there always is a risk of not returning. Fighter pilots know this more than most aviators because in war you fly to shot down or to be shot down. But the pilot of whom I'm going to write about was flying in perfect weather and not in a war, so why was he shot down?

At the beginning of the 1950s, the Ecuadorian Air Force (FAE) was an independent branch of the military for only a few years. Under the command of the charismatic TGrnel. Edmund S. Carvajal, new rules were adopted to improve safety in air operations. Special emphasis was placed on the professional training for FAE members. Pilots and mechanics were sent to special schools to improve flight operations. In 1953, as part of this program, a group of air cadets were sent to the Brazilian Air Academy. Among them was cadet Christopher Barreiro Paredes.

The afternoon of 3 November, 1952, was hot and cloudy. At the Brazilian Air Academy, the Fairchild PT-19, with their distinctive orange wings, were taking off and heading into the sky - one after another in a perfect formation. Far away could be heard the howitzers of the Brazilian Army practicing. Among the lucky ones to fly his first solo that day was the Ecuadorian cadet Christopher Barreiro.

There is nothing more beautiful and, at the same time, more terrifying than the first solo flight - sweaty hands, dry throat. However, all this disappears when you sit in the cockpit. Barreiro went over the standard procedures of the preflight check list. One of the steps was to check for any signs on the ground that would present the air cadets with a dangerous situation! For example, they had to check for the red flag that would warn the cadets of the danger of flying over the firing range when the howitzers were having practice. Since there was no red flag, Barreiro assumed it was ok to fly. (The flag has fallen from the pole.) He continued with the checklist. Upon completion of the list, he applied full power and began taxiing down the runway. As he gained speed, the controls responded firmly and the aircraft rose into the air like a powerful bird. It was a good takeoff and headed to the shooting range. He looked over his shoulder to see the earth being transformed into a giant quilt of patches of different colors and sizes.

Not much time had elapsed when suddenly, BAM, he heard a loud bang behind him. The plane begins to

vibrate. It doesn't respond as he tried to understand what's was going on! Then, suddenly he saw passing by one of his wings a portion of the rudder of his plane! The machine was disintegrating! He had to leave the plane quickly! or he will perish in it!

A shell from the firing range had struck the small plane's rear seat and exploded - lucky he was sitting in front seat. The plane was falling apart forming a Dantesque spectacle. The people on the ground heard the explosion and instinctively looked at the sky. They feared the worst. However, from the chaos of smoldering pieces of plane blossomed a parachute. It was Barreiro who had managed to escape from the dying aircraft.

He landed in a tree on the army camp. The tree contributed additional lacerations to those brought on from the explosion of his aircraft. He was promptly attended to by an ambulance and a group of comrades who, concerned about his welfare, had rushed to where he had landed to know about his status.

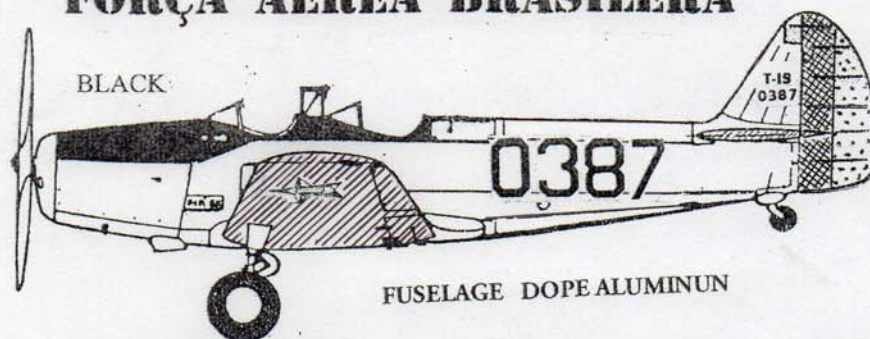
Cadet Barreiro was miraculously saved - possibly by providence or by his faith in God. He had received deep wounds in the back of the legs, hips, and buttocks which kept him bedridden for some time in the hospital. After surgery to remove the remaining shrapnel, he was released to continued with his pilot training. After completing his instruction in Brazil, he return to the Ecuadorian Air Force to continue with his career until his retirement.

To this day, he walks the streets of his hometown as if this experience had never happened. He proudly bears the deep scars as a memory of his adventure that afternoon. In the history of the Ecuadorian Air Force, he will always be remembered as the first Ecuadorian pilot shot down on a mission that was not in a war. He defeated the "Grim Reaper" and lived to tell the tale.

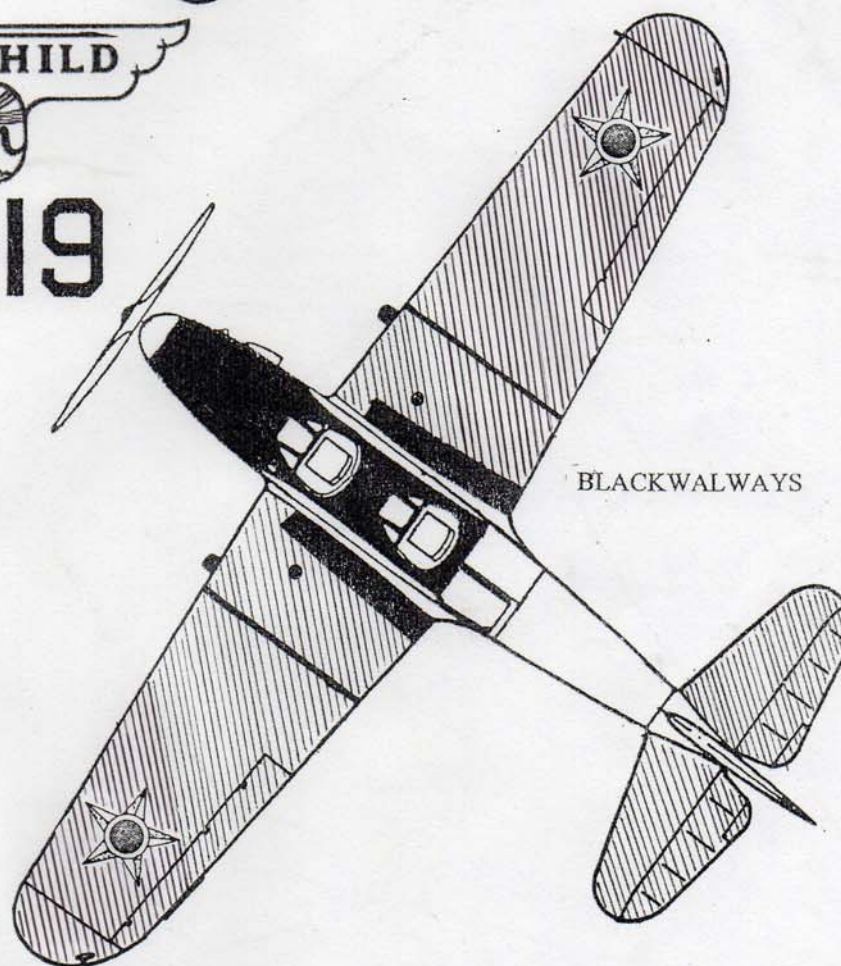
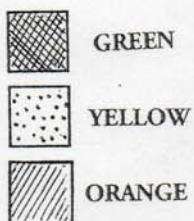
References: Squad Magazine, School of Aeronautics Mariscal Da Fonseca Rio de Janeiro, Brazil. Interview with Christopher Barreiro Paredes.

Jorge Delgado (#862), Ecuador.

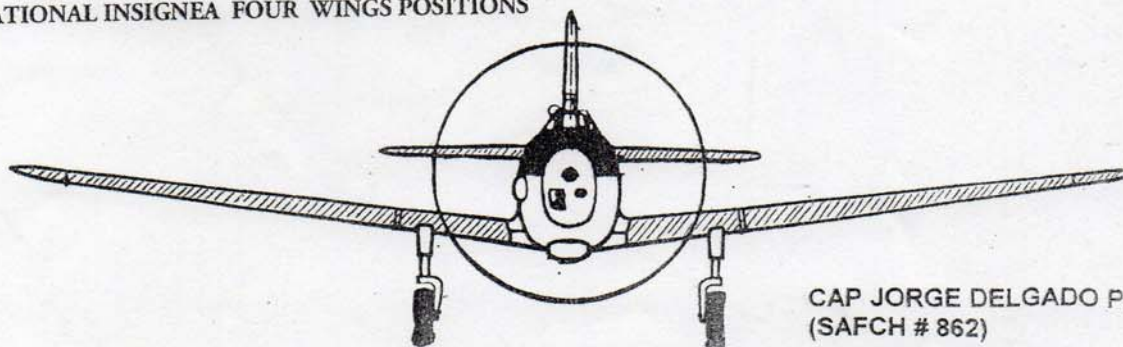
FORÇA AEREA BRASILEIRA



PT-19



NATIONAL INSIGNEA FOUR WINGS POSITIONS



Exotic Birds 6

Greg Kozak



Seychelles Cessna 150: This image of a Cessna 150 from Seychelles is yet another highly unusual one. It features the red-white-green roundel used prior to introduction of the colorful insignia now in use, based on the current flag. Image from Chris Thornburg.



Liberian Mi-2: This is quite a rare image of an Mi-2 wearing the Liberian Air Force roundel. I have seen it only one other time- on a Cessna 206 Caravan. It is obvious that the insignia was closely modeled on that of the United States Air Force. Image from unknown internet source.



Congo Alouette II: This Alouette II from Congo Brazzaville wears the pre-Marxist roundel of green, yellow, and red. This is also the current roundel of that country. At one point, due to a shortage of green paint, the center of the roundel on some aircraft was temporarily black. Image from <http://www.aircraftslides.com>.



Rwandan Rallye: This is another rare image- a Rwandan Rallye. It wears the country's former flag on its fin, an alternative marking to that of the two roundels of red, yellow, and green used prior to adoption of the current national flag. Image from Jacques Guillem, at https://www.facebook.com/jacques.guillem?fref=ts&ref=br_tf.



South African Police Cessna 185 The Cessna 185 served in the South African Air Force. The South African Police used it as well, as shown in this image. Note the police force badge used as a roundel, as well as its unusual placement on the bottom of the right wing. Image from Chris Thornburg.



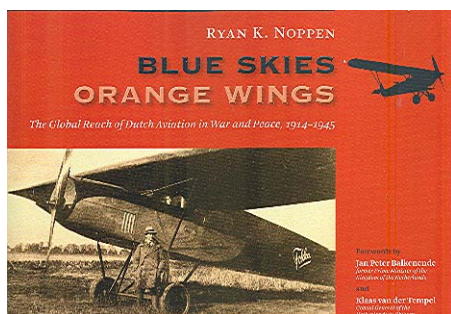
South Sudanese Mi-24 This image confirms rumored use of the Mi-24 by South Sudan. Note the insignia on the tail fin, in the form of the national flag. The configuration of the aircraft number below it, in white, is quite unorthodox. The exact number is not clear, but South Sudanese aircraft identifiers are prefixed with "SPAF-". Image from <http://www.un.org/>.



Argentine Army C-47: This Argentine Army C-47 wears a very unusual, non-standard roundel. Photographic evidence shows that Argentine Army C-47s with this marking wore it on the lower-right and upper-left wings. The opposite wings featured the aircraft number, in this case "E.T.A. 102". Image from <http://elhangardetj.blogspot.com>.



South Yemen An-24: This An-24 from the South Yemen Air Force features the standard roundel in use by that country prior to its unification with North Yemen in 1990, to form the current country of Yemen. It includes, however, an image of a bird and a banner at its top. I have a close-up of this roundel as well. Image from <http://forum.keypublishing.com>.



Blue Skies, Orange Wings: The Global Reach of Dutch Aviation in War and Peace 1914-1945, by Ryan K. Noppen. 352 landscape pages (9" by 12"). Hardcover. Published by Wm. B. Eerdmann Publishing Co. www.eerdmans.com. (2016) \$45.00. Available in Europe from Alban Books www.albanbooks.com. £29.99.

It's rather surprising that a book on the history of Dutch aviation would be written by an American and published by an American printing house. However, the author's Dutch ancestry explains his interest in the subject and we should rejoice that it is written in English. Furthermore, it is well researched, intelligently written, and the presentation is outstanding.

The book covers Dutch aviation, both military and civilian, all Dutch designers, especially Fokker, Dutch designers working outside of Holland, e.g. Frits Koolhoven in the UK, and the story of Dutch aircraft employed by other countries.

To give this book full justice, a review would run about a page per chapter. However, I can give you some idea of the depth and breath of the coverage by listing the subtitles in each chapter (with a brief comment, if necessary) followed by list of the color profiles in each chapter.

While on the subject of the color profiles: Each profile is accompanied by a lengthy paragraph providing background information about the type of aircraft and a side-bar providing technical specifications. In most cases, but not all, the color profile is accompanied by a photo of the aircraft and a color rendition of a photo of the aircraft preserved in a museum.

Many of the aircraft types not depicted by a color profile are illustrated with color drawing and the usual long paragraph, technical specifications, and photo. These are not included in the summary below.



Described at the 1938 Salon International de l'Aeronautique as "l'avion le plus rapide du monde" (the fastest aircraft in the world), this supposedly promising fighter turned out to be anything but. The F.VIIb/3m was designed for and first ordered by the French Armée de l'Air, which was desperately seeking foreign fighters to remedy slow domestic output and which was looking for a cheaper alternative to American-built fighters. Also desiring a cheap fighter, Dutch Defense Minister van Dijk ordered the F.VIIb/3m for the ML. However, his successor, Adriaan Dijkshoorn, and the ML leadership were not enthusiastic about the F.VIIb/3m's performance and hoped to buy better fighters abroad. But as World War II began, Great Britain and Germany were no longer willing to sell any modern fighters to the Dutch, and Dijkshoorn was forced to keep the Koolhoven contract. But no F.VIIb/3ms ever reached the pilots of the ML. The Bristol Taurus engines Koolhoven had ordered from Great Britain were confiscated by the RAF, leaving only the less powerful Bristol Mercury VIIs available from ML stocks. The Germans invaded the Netherlands before those engines could be mounted to any airframes. (Militaire Luchtvaart Museum, Soesterberg)



Koolhoven F.VIIb/3m
length: 20 ft 6 in (6.2 m)
wingspan: 36 ft 1 in (11 m)
powerplant: one 1400 hp Gnome Rhone 14/50 radial
maximum speed: 295 mph (475 km/h)
climbing: 3200 ft (975 m)
range: 400 miles (640 km)
armament: four 7.9mm FN-Browning machine guns

200 BLUE SKIES, ORANGE WINGS

Chapter 1: The First World War (38 pages) The Fight to Remain Neutral, Gifts from Above (interned aircraft), Spyker Airplanes. Shopping Abroad. Domestic Difficulties. The Fokker Scourge. **Profiles:** Nieuport-Spyker XI, Thulin K, Albatros D.III, Fokker D.III, Rumpler C.VIII, Trompenburg-Spyker V.2, SPAD D.VII, Armstrong Whitworth FK.8 (designed by Dutchman Koolhoven). [Ed: This chapter makes an excellent complement to Frits Gerdessen's series in SAFO. Ryan gives a review of the period while Frits goes into the nitty-gritty of each year's developments.]

Chapter 2: The Postwar Ascent (46 pages) The End of the War? The Return of the Prodigal Son (Fokker's smuggling of D.VII, D.VIII, and C.I under the noses of the Inter-Allied Aeronautical Control Commission. The Shadow of the D.VII. The ELTA (First Aviation Exhibition Amsterdam 1919). The Koninklijke Luchtvaart Maatschappij (KLM).

Fokker's First Transport. Flying in Comfort. The Foundation of the Aerial Empire. Koolhoven's Giant White Elephant. The First Fokker Trimotors. New Routes and New Aircraft. The Return of Fokker Fighters. Fokker's All-Purpose Combat Aircraft. The LVA in the 1920s. The Defense of the Empire. **Profiles:** Spyker V.3; BAT FK23; Airco DH.16; Airco DH.9C; Fokker F.III; Fokker F.VII; NVI FK.33; Fokker F.VIIb/3m; Fokker VIII; Avia F.39 (Fokker F.IX); Fokker D.XI Romania; Fokker D.XIII; Fokker C.Ve; Fokker F.VIIa Ethiopia; Fokker D.XVI; Van Berkel WA; Avirolanda-Dornier Wal; Fokker T.IVa; Avirolanda-Curtiss P-6.

Chapter 3: The Dutch Immigrate to America (30 pages) Strange Bedfellows: Tony Fokker and Billy Mitchell. Fokker goes Transcontinental. (The flight of the T-2.) A Brief Military Interlude. The Trimotor's American Conquest. Universal and Super. The American Reign of Fokker. The Forsaken Giant (The four-motor Fokker F.32). The Plane that Fell from the Sky: The Crash of Fokker's American Fortunes. Fokker's New Deal and Roosevelt's Shenanigans. **Profiles:** Fokker F.VI (PW-5); Atlantic DH-4M-2; Fokker Super Universal; Fokker F.10A, Fokker F.32; Fokker (General Aviation) YO-27; Fokker (General Aviation) XA-7;

Chapter 4: Fokker Makes the World a Little Smaller (24 pages) A Byrd Flies to the North Pole. The Misadventures of the *America*. *Bird of Paradise*. The *Southern Cross*. The *Friendship* of Amelia Earhart. **Profiles:** Fokker VIIb/3m *Friendship*. There is only one color profile in this chapter, but this is compensated by a world map showing the routes of eight "Famous Fokker Flights" that includes color profiles of each of the eight famous Fokkers.

Chapter 5: East Indiamen of the Air (48 pages) Depressing Peace and Peaceful Depression Dutch Domination of the Far Eastern Aerial Trade Route. The 1933 Kerstpostvlucht and the flight of the *Pelikaan*. The All-Metal Airliner. (KLM buys DC-2s.) The MacRobertson Race and the Flight of the *Uiver*. Fokker-Douglas. To the Ends of the Empire. (KLM in the West Indies.) The Violent

End of Fokker's Trimotors. (Trimotors in Spain.) Forsaking the Flying Boat. The Pursuit of the Intercontinental Airline. **Profiles:** Fokker F.XII; Fokker F.XVIII; Fokker F.XX; Fokker F.XXXVI; Pander S4 Postjager; Lockheed Model 14 Super Electra; Fokker F.VIIb/3m Spanish; Douglas DC-4E; Focke-Wulf Fw 200B Condor; Boeing 307 Stratoliner;

Chapter 6: Trying to Fly over the Storm (32 pages) Defending Neutrality Once More. The LVA in the 1930s. The Search for Modern Aircraft: Too Little, Too Late. A Quartet of Foreign Aircraft Considered for ML Service (in Hypothetical Dutch Colors and Markings: He 112E, Hurricane I, Spitfire Ia, & Do 215B-1). A Change in Leadership. Case Yellow. Suspensions Grow. **Profiles:** Fokker D.XVII; Fokker C.X; Fokker D.XXI; Fokker T.V; Fokker G.1A; Koolhoven FK.56; Koolhoven FK.58; Fokker T.IX; Fokker D.XXIII; De Scheide S.21.

Chapter 7: Lightning Strike in May (52 pages) The First Day of the *Meidagen*: The Battle for the Airfields (May 10, 1940). The Urban Assault on Rotterdam. The Wrath of Orange. (The ML fights back.) The Second Day (May 11, 1940). The Third Day (May 12, 1940). The Fourth Day (May 13, 1940). The Final Day (May 14, 1940). **Profiles:** Douglas 8A-3N; Fokker T.VIIIw; Heinkel He 111P German; Ju 52/3m German.

Chapter 8: A Rising Sun in Orange Skies (42 pages) A Good Defense is a Good Bomber Offense. Fighters, Fighters, Fighters! The Blinding Glare of the Rising Sun. Preparations for the Coming Storm. The MLD Draws First Blood. The Defense of Borneo and Celebes. Dutch Assistance in Malaya and Singapore. The Airborne Assault on Sumatra. Pushed Back to Java. The Battle of Java Sea and the Loss of the Langley. The Abandonment of Eastern Java. The Raid on Broome and Smirnoff's Finest Hour. The End on Java. **Profiles:** Martin 139 WH-3A; Curtiss-Wright CW-21B; Curtiss Hawk 75A-7; Brewster B-339D; Hawker Hurricane Mk.IIB Trop; Lockheed 212;

Conclusion: Stubborn Dutchmen (13 pages) Orange in the RAF. KLM Flies On. Down but Not Out in the Far East. The End of the Golden Era and a New World Order. **Profiles:** Supermarine

Spitfire Vb; Douglas DC-3; Fokker F.XVIII *Oriol*; North American B-25C Mitchell; Curtiss P-40N;

The appendices include the usual Bibliography, but also the much appreciated Index of Names and Index of Aircraft.

My only disappointment is that the narrative ends in 1945, and I had hoped it would cover the aerial activities in the Netherlands East Indies (NEI) after the end of WW2, including the independence of Indonesia and the final withdraw of the Dutch from the East Indies.

As you have probably guessed by now, I am completely enchanted by this book. The author is to be complemented on the depth of his research and on his clear writing style. I was particularly grateful for his inclusion of many excerpts from contemporary account including first-hand accounts. For example, the account by van de Hoop, the pilot of the prototype F.VII. 'H-NACC' that force landed in Bulgaria while on a 1924 survey flight from Amsterdam to Batavia (NEI). He describes the difficulties of getting a telephone to inform Amsterdam that he needed a replacement engine, how a subscription fund set by a Dutch news paper was need to raise the money for the new engine, and the arrival of the new engine by ox cart (photo included).

Much credit must also go to the publisher. The reproduction of the photos is excellent, the color illustrations are vibrant and as true to the actual colors as the printing process allows. The inclusion of many contemporary posters and advertisement add to the feeling of the times. However, it was the treatment of the color profiles that knocked my socks off. Instead of the usual few lines of description, we have the color profile accompanied by a photo, a lengthy and informative paragraph, a list of technical specifications, and a photo the aircraft as preserved in a museum.

This book is not one to be read while in bed. It weighs 3 lb 7 oz (1.56 kg) and it could be fatal if you fall asleep with it on you chest. It should be read a few sections at a time and savored like a good meal.

This book is highly recommended to all aviation enthusiast and it is my choice for small-air-forces books of the year – if

not for the decade. And, at a price of \$45 it's a real bargain.

[Editor's Note: As I was writing this review, a package came in from the Netherlands containing, among other things, a paper kit (scale unknown) for the *Uiver*, the KLM DC-2 that won the handicap division of the London to Melbourne Race in 1934. This kit is available for free from the SAFCH Sales Service – you pay the postage – on a first-come-first-served basis.]



Les Avions Français aux Couleurs Allemandes durant la seconde guerre mondiale: 1^{re} partie (Amiot à Delanne), by Phillippe Ricco. Avions Hors-série #40. 104 A-4-size pages. Published by Lela Presse www.avions-bateaux.com. €17.50 plus postage.

This first volume of a series on French in Luftwaffe markings cover 38 types from Amiot to Delanne. Each type is given a short introduction (in French) followed by photos and color profiles (with captions in French), and a table listing the Luftwaffe code, French s/n, and notes on such things as accidents while in Luftwaffe service. Coverage varies from less than a page with one photo when only one aircraft is known to been in Luftwaffe service to 35 pages with 91 photos for the more than 500 examples of the Caudron Goeland known to have been in Luftwaffe service.

Since this is predominately a picture book, the easiest way to give you an appreciation of the quantity and quality of coverage is to list the content of each type. In the listing below, the key is to the number of (pages, photos, profiles).

The number of pages is rounded off with the symbol \approx indicating less than a full page.

Amiot

Amiot 351/354 (1,1,0)
Amiot 356 (\approx ,0,0)

Arsenal

VG-33 (1,4,0)

Bloch

MB-131 (1,3,1)
MB-151/152 (5,17,1) Table
MB-155 (2,5,1)
MB-157 (1,2,0)
MB-161 (4,16,2)
MB-160/162 (1,3,1)
MB-174/175 (5,17,1)
MB-176 (1,1,1)
MB-177 (1,3,1)
MB-200 (6,29,2)
MB210 (1,4,2)
MB-220 (2,3,2)

Breguet

Br XIX (\approx ,0,0)

Br 521 Bizette (7,27,2)

Br 691 (\approx ,1,0)

Br 693 (2/6/1)

Br 695 (1,1,1)

CAMS

CAMS 37 (2,7,1)

Potez-CAMS 160 (1,2,1)

Potez-CAMS 161 Picardie (8,26,1)

Caudron

C.232 (\approx ,1,0)

C.275 Luciole (2,4,1)

C.400 Phalène (\approx ,1,0)

C.445 Goéland (35,91,2) Tables

C.446 Super Goéland (1,2,1)

C.450 Rafale (\approx ,0,0)

C.480 Frégate (\approx ,0,1)

C.600 Aiglon (1,1,1)

C.690 (1,1,1)

C.635 (2,6,1)

CR.714 Cyclone (1,4,1)

CR.760 Cyclone (\approx ,1,0)

C.870 (1,2,1)

Delanne

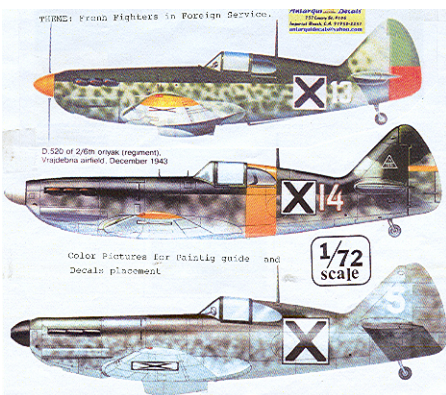
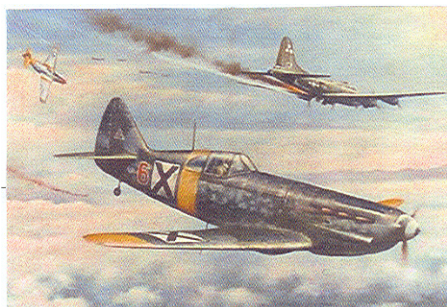
10 C² (2,5,2)

2OT (1,2,1)

It is amazing how many photos, many in color, have survived. The German's must have been very proud of their excellent cameras. All the photos and color profiles are of aircraft in Luftwaffe markings, so there is nothing here of "small air force" interest. I have no intention of making a model of any of the aircraft illustrated in this series. However, I find this book invaluable as an "encyclopedia" of WW2 French aircraft. How many of the above aircraft types can you identify?

The production quality of this book is to the high standards expected from Avions: high-quality glossy paper, excellently reproduced photos, and vibrant color profiles. It is highly recommended to anyone interested in WW2 French aircraft – and is a bargain at about \$17.50 plus postage.

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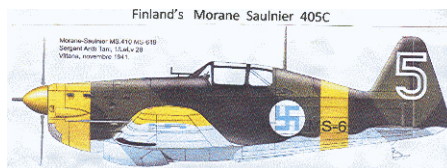
Bulgarian Dewoitine D.520, 1/72-scale decals. Antarqui Decals. Available from the SAFCH Sales Service for \$6.00 plus postage.

This is the first of a new Antarqui series on "French Aircraft in Foreign

Service". The decal sheet (9cm by 9cm) provides 4 large and 12 medium national insignia and individual aircraft numbers for three Dewoitine D.520 in Bulgarian service: (1) white "13" with green/red rudder (rudder decals not provided). (2) White "14" outlined in red. And, (3) white "5". Included on the sheet are two of the unique Bulgarian type identification triangles.

The instruction sheet consists of three color profile drawings and two paintings of Bulgarian D.520 in action against USAAF aircraft.

As is usual Antarqui practice, the decals are printed on the background color of the airframe thereby avoiding the necessity of cutting around the complicated-shaped numerals. This should work pretty well for the D.520 considering the spotted camouflage would have to be hand painted.



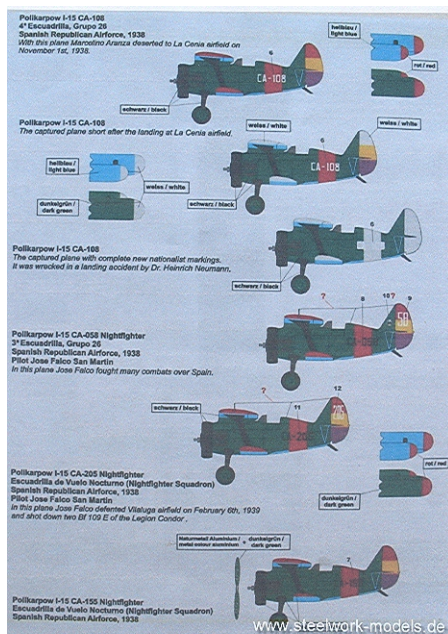
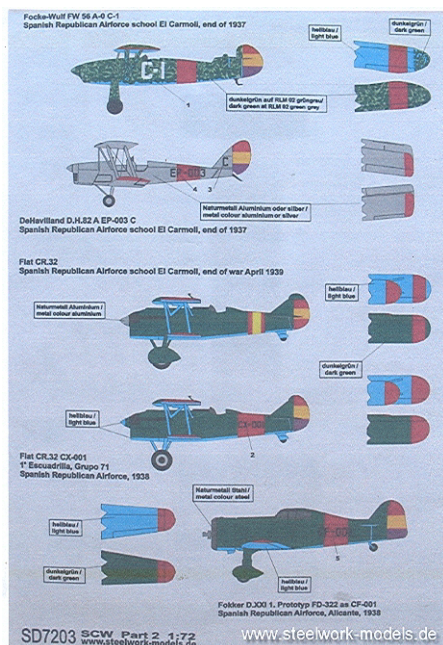
Finnish Morane-Saulnier MS.410, 1/72-scale decals. Antarqui Decals.

Available from the SAFCH Sales Service for \$3.00 plus postage.

There is some confusion over the exact aircraft type featured on this decal sheet. The decals provide are for 'MS-619', and on the instruction sheet the aircraft is identified to have been flown by Sergeant "Aniti Tani of 1/LeLv 28 from Vitana, November 1941". However, on various other places on the instruction sheet, it is referred to as either an MS-405C, MS-406C, or MS-410. According to *Suomen Ilmavoimien Lentokoneet 1939-72*, by Kalevi Keskinen, 'MS-619' was an MS.406.

The decals (6cm by 7cm) consist of six national insignia (light blue swastikas), the white-outlines black "5" for the vertical fin, and 'MS-619' for the fuselage.

Once again, Antarqui has chosen to print the decals on the color of the background. While this simplifies the cutting out of some of the decals, such as the "5", it is not too successful with the roundels - some of which have two-colors in their back ground. These will have to be touched up after being applied. For example, the under-wing roundels will need half the light blue background over-painted by "identification yellow".



Spanish Civil War, Part 2, 1/72-scale decals. SD7203. Steelwork Models. Uwe Borchert, Beerbaumstrasse 15, 13125 Berlin, Germany. €6.95.

"These waterslide sheets are a continuation of SCW Part 1. Part. 2 includes markings for Republican trainers (DH-82 and FW 56), a captured CR-32, the unique Fokker D.XXI, several Polikarpov I-15, as well as insignia and

codes for a large number for Condor Legion Messerschmitt Bf 109s.

"Of particular interest are the decals for the Polikarpov I-15. There are three different schemes for CA-108 which defected to the Republicans, and three schemes for I-15 night-fighters including CA-155 in which German anarchist Walter Katz was KIA November 11 1938; CA-058 as flown by José Falcó Sanmartín while with the 3a Esc. de Chatos; and CA-205 in which Falcó fought his ultimate combats over the Vilajuga area on February 6, 1939.

"A minor change should be made to the instruction sheet. (This correction in no way affects the quality or usefulness of the decals as printed.) Polikarpov I-15 Chatos license-built in the Spanish Republic (and coded CA- from late 1937 to early 1939) were not painted in VVS dark olive green above and light blue below, (nor were they coded CC-). The license-built I-15s were painted aluminum below with 'Spanish Green' on the upper surfaces.

"There is a debate about the actual 'Spanish Green' color. It may really have been Armée de l'Air verte Emaillite 1914 (Protective Green used on French-built fighters up to the start of WW II, and close to FS595a. 341081), or Vert Moyen 1915 (Medium Green, discontinued in 1938; close to. FS595a 34159).

"José Falcó built 1/48 and 1/32 scale models of his CA-058. In both. cases, he painted the under surfaces aluminum and the upper surfaces Humbrol 'Brunswick Green' to match the 'Spanish Green'. He painted all struts, including the tail skid, black which was the FARE night-fighter distinctive marking. In conformity with most Chatos, the cowling rings on his models were also painted black.

"Had he lived longer, José Falcó would have been very pleased to use these decals. Modelers using the superb SCW Part 2 decals to make an I-15 night-fighters may wish to follow the Ace's lead.

"Uwe Borchert is to be highly commended for his choices and renderings of these subjects. Hopefully, he will also produce the I-15 night-fighter

decals in 1/48 scale." Tom Sarbaugh (#497), USA.



Spanish Civil War, Part 1, 1/72-scale decals. SD7203. Steelwork Models. Uwe Borchert, Beerbaumstrasse 15, 13125 Berlin, Germany. €6.95.

You can decorate 8 different Republican aircraft: Dewoitine D.510 CW001 or CW-002; Letov S.231 CL-009 or Letov S.331 CL-001; Bücker Bü 131 33-3; Bücker Bü 133 35-1; Bloch MB.210 "M"; Potez P.540 "F" "Aqui te Espero" As a bonus, there are the codes for Heinkel He 70 E-1 14-47.

In his review of SCW Part 2, Tom Sarbaugh did not provide a review of Part 1, but he did include a PS: "For those using SCW Part 1, French multi-engine bombers built in the 1930s and sold to the Spanish Republic (e.g. the Potez 54 series and Bloch MB.210) were painted Vert Lierre 1930 (Ivy Green, FS595a. 34092-34121) overall, except for their engine nacelles which mostly were left in aluminum."

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“Here are some photos that should be of interest to our readers:

“First are two photos of Khmer Rouge/'Democratic Kampuchea' Shenang J-6 (MiG-19). The DK received six J-6s (of 30 ordered) plus two 'jet bombers' (possibly Chinese-built IL-28) of six ordered. The DK air unit was known as 'Division 502' None of the DK a/c saw any operational use during the Vietnamese invasion of Dec78/Jan 79. The DK sent a batch of students to China for pilot training in 1978, but as they were all from 'politically correct' poor peasant backgrounds, progress was extremely slow. The DK info above comes from 'The Pol Pot Regime' by Ben Kiernan.

“The wing markings are simple rectangular DK flags. I saw this bird in the Phnom Penh Military Museum in the early 'nineties, when it was in pretty good condition. It's now in the Siem Reap Military Museum, near Angkor Wat, where it is virtually wreckage.



“Here are two other photos. The first is a rather better picture of the Aum Shinrikyo Mil 17 than the one in SAFO #154. The '4K' registration is from Azerbaijan. Picture is from the UK press at the time.



“The second photo is a Lao Mil 17 at the Lao Military Museum in Vientiane.”

John MacGregor (#766), Scotland



“Re: January 2016 issue. Nice issue—as always. I was particularly interested in the ‘KPAF ‘Group Z’ in the Vietnam War’ article and the review of *Silver Swallows and Blue Bandits*. I’ve known Dr. Toperczer for some time. We have helped each other occasionally. His in-depth

research into the VPAF is of great value to anyone writing or reading about the air war over there. (I’m afraid getting a copy of his new book has proved quite difficult. Amazon doesn’t carry it, and the publisher’s web site is not very open to

customers outside Europe. At least that has been my experience.)

“I mentioned the Korean pilots in my 2014 Osprey book *F-8 Crusader vs MiG-17, Vietnam 1965-72*. I am attaching one of the doctor’s photos of the North Korean cemetery in Vietnam. Besides his writing, he

happens to be one of the finest photographers of military aircraft I know. He has also taken many excellent photos while on a tour to Afghanistan, worthy of any *National Geographic* photographer.

"By the way, a bit of trivia concerns Major Low, mentioned on page 87 of the new issue. Anyone who has read James Salter's iconic novel about the air war in Korea, *The Hunters*, or has seen the movie of the same name, starring Robert Mitchum and Robert Wagner, will want to know that Low was the model for the young hot-shot lieutenant ace Pell, who becomes the bane of Major Cleve Seville, and is the character played by Wagner in the movie. If you haven't read the book, I highly recommend it. It was recently republished and can probably be found on any book-search site. The writing is superb and the book ends with one of the most simple yet spine-chilling paragraphs of any military novel I have read. The author knows whereof he writes having served as an F-86 pilot in Korea and is credited with one MiG-15 kill. James Salter's additional books are also available. You won't be disappointed."

Peter Mersky (#1355), USA.



"The only known source for obtaining *Silver Swallows and Blue Bandits* is through the Dutch AviationMegastore located in Holland. It can be ordered through their website - <http://www.aviationmegastore.com/>, but at the very costly price of \$52.62/€46.18 (plus VAT for EU members, and shipping and

handling). I would only recommend paying that much money for this book if the reader has USAF and USN histories of the Vietnam air war handy in order to balance the one-sided presentation by Dr. Toperczer." Doug Dildy (#844), USA.

"Re. #155. First of all thanks to Ted Koppel for identifying the Indonesian 'Sikumbang'. This would make a great name for a UAV!

"The main reason for writing is to congratulate Santiago Rivas on his Fw 44J article. When I saw the photo of LV-YZM at Baginton, it dawned on me that I have several photos in my 'archives'. Enclose are copies that you can forward to Santiago.

"The b&w side view is the frontispiece of *The Lockheed Aerobatic Trophy* by Tony Lloyd, a monograph published in 1976. He states that LV-YZM was shipped to Tilbury/London. Then it was forwarded to Baginton where it was assembled by Alvis engineers. Also included is a colour spread from the magazine *Aeroplane* published in 2011. Finally, there are pages from the 1955 and 1956 display programmes. These show the 'opposition'; and, as you can see, it was very much a freestyle contest - Gloster Meteor versus Buckler Jungmeister!

"I attended most of the shows at Baginton from the age 3 in 1949, but I can't remember seeing the Fw 44J. We were in the 'peasant's enclosure' about half a mile away.

"Apart from Farnborough and Battle of Britain Air Shows, Baginton was *the* air show in those far-off days and was staged by the City Council." Malcolm Barratt (#1716), UK.

"I always check amazon.com for book prices, even foreign books. *Pride of Eagles* (SAFO #155) currently lists 7 sources, prices ranging from \$21.51 to \$48 plus \$3.99 shipping all listed as 'new condition'. That's less than 45 Pounds even with the \$3.99 postage added. It

is always wise to look at amazon.com before ordering elsewhere.

"My private library now has 2400+ books, and the *Heraldry of the Air* library has 1900+, at least half of which were bought at amazon.com., many for as little as \$0.01, and hardly any for over \$10. Even the slightly used ones are usually good enough, just carefully read the descriptions for each price point. Also Amazon's vendors are held to the strictest standards, over the years, we have lost a few in the post and a few arrived damaged; in every case we notified the shipper/vendor, and had a full credit next day, and every time so far they have not asked for the damaged copy to be returned as proof of claim. I give Amazon and its vendors a 5-star rating. I highly recommend them for all serious book collectors."

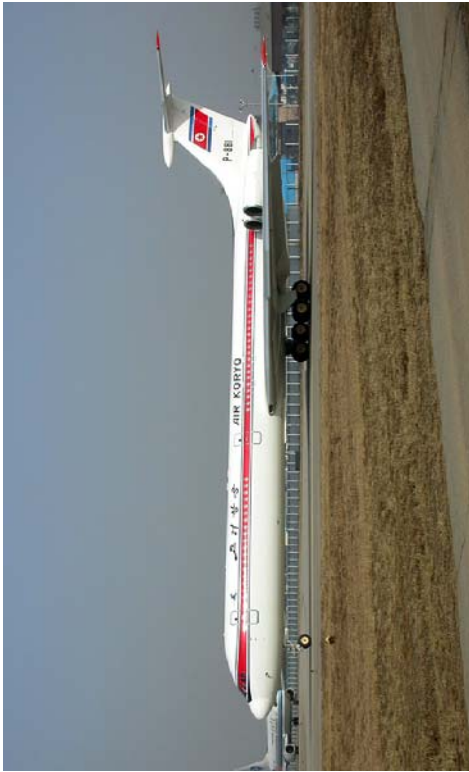
Peter Walton, (#1751), USA.

[Editor: Don't forget your local book seller for the less exotic books. To find out more about the *Heraldry of the Air*, contact Peter at <pete walton@msn.com>.]

"Regarding the review by Malcolm Barratt in SAFO #154 of the English-language edition of 'Russian Aviation Colours' Vol. 1: I have the Russian language edition and the translator seems to have a good grasp of Russian.

"On page 6 of the Russian original is a reproduction of the painting 'Kove'r-Samole't [Flying Carpet] by V[iktor] M[ikhailovich] Vasnetsov - and the date given is 1926. But, I wonder if this is correct - one might think that the subject and treatment are from an earlier period - and 1926 is the date of the artist's death. So far I have not been able to find another reproduction of this painting, but it seemed familiar. Does the English translation also have 1926? I'll try to sort this out.

"Viktor M. Vasnetsov died 1926. 07. 23 of heart failure. His artist brother Appollinari died 1933." Denys Voaden (#1483), USA.



Chosonminhang-Korean Airways expanded its international operations in 1982 with the acquisition of five 190-passenger Il-62M "Classic" four engine long-haul airliners (two of them in DPRK government livery as VIP transports) and could finally offer non-stop service to Moscow. One Il-62M was lost in a crash the next year, and a Cubana de Aviación example was acquired as a spares source. (Author's Collection)



The most important upgrade was Air Koryo's acquisition of two new Tu-204 jetliners. The first was the shorter length, longer ranged 166-seat Tu-204-300, which was the first of its type exported by Russia and was received in December 2007. In March 2010, Air Koryo took delivery of its second Tu-204, a 210-passenger -100V version. The Tu-204s provide service to Beijing, Bangkok, Kuala Lumpur, Singapore, and Kuwait City. (Author's Collection)



In August-December 1990 Chosonminhang-Korean Airways added a heavy-lift capability by acquiring three Il-76TD "Candid-B" cargo aircraft with the military tail-gun position removed. Originally delivered in the Chosonminhang-Korean Airways livery, as seen here, in March 1992 the airline was renamed "Air Koryo" and the fleet was repainted in the scheme seen in the photo on the back cover. (Author's Collection)



Air Koryo's most recent acquisition was in 2013 when it received two new 70-passenger Antonov An-148-100B regional airliners. These supplement the two aged Tu-134 "Crusty" airliners and allowed expansion of services into China, including weekly flights to Dalian, Shanghai, Shenyang and Harbin. (Author's Collection)



Air Koryo operates three Ilyushin Il-76TD "Candid-Bs". These are civil versions – with the tail gunner position removed/faired in and other modifications – of the improved Il-76MD (MD for modifitseerovanny Dahl'ny – modified, long-range) military transport version. The first Il-76TD flew in 1982 and North Korea acquired three examples in August-December 1990. (Author's Collection)